NATIONAL TRANSPORTATION SAFETY COMMITTEE

REPUBLIC OF INDONESIA

FINAL

KNKT.19.07.16.03

Marine Accident Investigation Report

Allision of *Soul Of Luck* with Container Gantry Crane

Port of Tanjung Emas, Central Java

Republic of Indonesia

14 July 2019

2021

The report is based upon the investigation carried out by the National Transportation Safety Committee (KNKT) in accordance with IMO Resolution MSC.255(84) and Indonesian Shipping Act (UU No 17/2008).

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The report is based on:

1. Indonesian Shipping Act No 17 Year 2008, articles 256 and 257 as well as the explanatory memorandum;
2. Government Regulation No 62 Year 2013 on Transportation Accident Investigations;
3. Presidential Regulation of the Republic of Indonesia No 2 Year 2012 on the National Transportation Safety Committee; and
4. IMO Resolution MSC.255(84) on the Casualty Investigation Code.

The report is published by the National Transportation Safety Committee (KNKT), 3rd Fl. Transportation Building, Ministry of Transportation, Jln. Medan MerdekaTimur No 5, JKT 10110, Indonesia, in 2021.

FOREWORD

Praise to be given to the Almighty God with the completion of the preparation of the Final Report of the Investigation into the Allision of Soul Of Luck with Container Gantry Crane on 14 July 2019 in Port of Tanjung Emas, Central Java, Republic of Indonesia.

The Completion of this Final Report of Marine Accident Investigation was mandated by Indonesian Shipping Act No 17 Year 2008 Article 256—257 as well as Government Regulation of Transport Accident Investigations No 62 Year 2013 Article 39 Paragraph 2 Letter c which states that "*The report of transport accident as referred to the verse (1) consists of the final report.*"

The report is the final output of the entire investigation process which covers fact information, analysis of causal factors that most likely contributed the accidents, recommendations for prevention and improvement, and appendix of other supporting documents. The report discusses about the marine accident issues about what, how and why the accident occurred and findings about the cause of the accident along with the recommendations of shipping safety to the parties to minimize or prevent recurrence by the same factors in the future. The final report is issued or publicly published after requesting responses and/or feedback from regulators, operators, manufacturers of transportation facilities and other related parties.

The last, but not least, the Final Report of Marine Accident Invetigation was made so that the interested parties could learn and take lessons from the accident.

Jakarta, 2 March 2021

NATIONAL

TRANSPORTATION SAFETY

COMMITTEE CHAIRMAN

Dr. Ir. SOERJANTO TJAHJONO

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EXECUTIVE SUMMARY

On 14 July 2019 at about 16.00 local time[1] (LT), a Panamanian container ship, named *Soul Of Luck* was approaching Port of Tanjung Emas, Semarang, Province of Central Java, Indonesia. The Pilot planned to onboard the *Soul Of Luck* at 1.5 nautical miles (NM) northern of the Buoy No 1.

At about 16.40 LT, the pilot embarkation point was shifted into the channel. The Pilot was in the channel and approaching the *Soul Of Luck*, whereas the two tug boats to assist the berthing of *Soul Of Luck* were just dispatched.

At about 16.46 LT, the *Soul Of Luck* was approaching the Buoy No 3 and 4, the speed was reduced to dead slow ahead and then stop engine.

Soon after, tug boat *Jayanegara 304*, was stand by at the fore of the *Soul Of Luck*, but no crew of *Soul Of Luck* to assist the tug line.

Around 10 minutes later, another tug boat, *Jayanegara 201*, made fast the tug line in the aft, whereas the *Jayanegara 304* was still in progress to making fast the tug line.

Soon later, the heading of *Soul Of Luck* was gradually turning to the port. The heading of the *Soul Of Luck* was approaching towards the *Kanway Galaxy*, a container ship which was unloading containers on the wharf.

At this time, the main engine of *Soul Of Luck* did not work for astern. The attempts of pushing the heading of *Soul Of Luck* by two tugs away from shore and re-activating the main engine of *Soul of Luck* to astern did not work effectively.

The heading of *Soul Of Luck*, finally, could be altered to starboard. However, she was still moving towards the port. Finally, she collided container gantry crane No 03 and the other ships, named *Ceria 8* and *Heng Xin*.

The investigation determined that the weather was not issue in the allision of *Soul Of Luck* with container gantry crane at Port of Tanjung Emas, Central Java. Therefore, the analysis discussed in the engine components performance, the action in dealing with the situation, regulations as the risk control measures as well as the cooperation amongst crew of *Soul Of Luck*, Master of tug boats and Pilot.

The investigation concluded the contributing factors of the occurrence was due to an engine control malfunction of *Soul Of Luck*. More over, it occurred when the *Soul Of Luck* was too close to the wharf. Those factors led to the loss of control of the *Soul Of Luck*. In addition, the KNKT as the Marine Safety Investigation Authority also found several safety issues rose altogether in this accident that need to be addressed.

Therefore, the KNKT has issued the following safety recommendations to the Ministry of Transportation, PT Pelindo III as well as Victoria Oceanway Ltd. and Osier Holding S.A.

[1] Western Indonesia Time (*Waktu Indonesia Barat*/WIB) is UTC + 07:00.

GLOSSARY

Accident site is a locus/place of a marine casualty(ies), ship wreck, ship collision(s), major damage of ship(s) or any property(ies) or environmental disaster due to ship operation, or any injuries to person(s).

Causal factors mean actions, omissions, events or conditions.

Closed-loop communication is a communication technique used to avoid misunderstandings. When the sender gives a message, the receiver repeats this back. The sender then confirms the message.

Coastal State means a State in whose territory, including its territorial sea, a marine casualty or marine incident occurs.

Emergency evacuation is a direct and rapid movement so the people away from any risks or occurrence.

Flag State is a State whose flag a ship is entitled to fly.

Interested party is an organization, or individual, who, as determined by the marine safety investigating State(s), has significant interests, rights or legitimate expectations with respect to the outcome of a marine safety investigation.

Local Harbour Master is the technical agency of regulator in the port area under the Ministry of Transportation which has the responsibility to oversee and undertake law enforcement in the aspects of marine safety and security; to coordinate the governmental activities at the port; to control and oversee the activities at the commercial ports.

Marine casualty investigator or **investigator** is a qualified person who has assigned by the marine safety investigation authority to carry out an investigation in regards a marine casualty.

Marine safety investigation is an investigation or inquiry (however referred to by a State), into a marine casualty or marine incident, conducted with the objective of preventing marine casualties and marine incidents in the future (casualty prevention).

Marine Safety Investigation Authority is an Authority in a State, responsible for conducting investigations in accordance with this Code.

Pilot is a person who is in charge of the transport and pilotage of the ship into the port up to her being anchored and moored and, similarly, in the reverse process until ship reaches the outward pilot station.

Port Service Provider is a commercial company which has the function to provide the services related to the port activities, such as pilotage, towing, un/loading, storing as well as supply of water, fuel and electric.

Seafarer is any person who is employed or engaged or works in any capacity on board a ship**.**

Ship seaworthiness is the ship's ability to withstand ordinary stress of wind, waves and other weather which the ship might normally be expected to encounter the ordinary perils of the seas.

Very serious casualty is a marine casualty involving the total loss of the ship or a death or severe damage to the environment.

I. FACTUAL INFORMATION

I.1. THE INCIDENT

On 14 July 2019 at about 16.00 LT, the Master of a Panamanian container ship, named *Soul Of Luck* made a notification to the Pilot Station about ship arrival at Tanjung Emas Port, Semarang, Province of Central Java. The Master reported through the VHF radio Channel 12 that the estimated time of arrival (ETA) was approximately at 17.00 LT. Also, the Master asked the information for pilot boarding location and on which side the pilot ladder would be lowered. Her speed was around 11.7 knots, while her course was 161.2°.

The Pilot Station Officer afterwards asked the assigned Pilot about the intended location for embarking the *Soul Of Luck* and which side the Pilot ladder side will be lowered. The Pilot planned to hop onboard the *Soul Of Luck* at 1.5 nautical miles (NM) northern of the Buoy No 1 and preferred the starboard side for pilot ladder. Instantly, the Pilot Station officer forwarded the messages to the Master of *Soul Of Luck*. Hence, the Master of *Soul Of Luck* acknowledged the information.

The Pilot Station officer asked the *Soul Of Luck* to increase the speed. By the time, the Pilot told the Pilot Station officer that the Pilot was already on the Pilot boat to approach the *Soul Of Luck*.

The *Soul Of Luck* would berth alongside the container port of Tanjung Emas by her starboard side on the Port No 3, next to the container gantry crane No 03. Around her spot, there were four other ships already berthed by their starboard side.

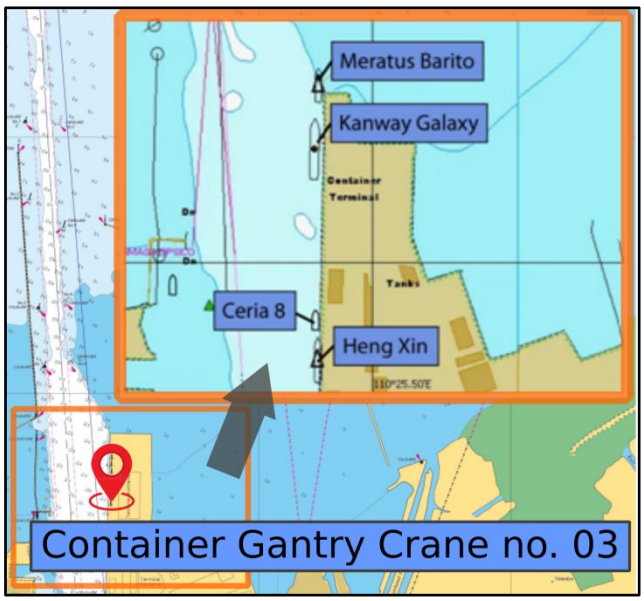

Figure I-1: Meratus Barito, Kanway Galaxy, Ceria 8, and Heng Xin whilst berthing on the Tanjung Emas Port (maps: Semarang VTS and Indonesian Nautical Chart No 91)

At about 16.30 LT, the Master of *Soul Of Luck* called again the Pilot Station officer. At this time, the Master told that the *Soul Of Luck*'s location was about 3 NM towards the Buoy No 1 and the Pilot ladder was ready on the starboard side. Her speed was around 11.6 knot, while her course was 163.9°.

At about 16.35 LT, the Pilot Station Officer contacted both tug boats *Jayanegara 304* and *Jayanegara 201* which will be deployed to assist the *Soul Of Luck* to berth. Each tug boat

confirmed the order. The *Soul Of Luck*'s speed was around 11.6 knots, while her course was 164.3°.

Other than *Jayanegara 304* and *Jayanegara 201*, there was another tug boat named *Anoman IV*. Refer to the information from the company of pilotage service provider, she was at southern of Tanjung Emas Port, waiting for the command if needed. She was ready to assist those tug boats.

Figure I-2: The position of Anoman IV

Four minutes later, the Pilot made the first call to the *Soul Of Luck*. The Pilot asked the Master to proceed slowly to the Channel. The Pilot planned to embark when the *Soul Of Luck* was already in the channel. The Master confirmed the request by replying to the order as a closed loop communication. The Pilot then appreciated the Master's willingness to proceed inbound. At this time, her speed and course were relatively constant.

Shortly after, the Pilot told the tug boats that the *Soul Of Luck* was already in the channel and asked both tugs to keep up. The Pilot also asked the *Jayanegara 304* to be at the aft and *Jayanegara 201* at the fore of *Soul Of Luck*.

At around 16.40 LT, the first tug boat, named *Jayanegara 304*, departed from the Passenger Port of Nusantara. Shortly after, the second tug boat, named *Jayanegara 201*, departed from the same location. Both tugs were moving at an average speed of 7 knots.

In the mean time, the Pilot had just been onboard the *Soul Of Luck*. On the bridge, there were the Master, Helmsman and Third Officer (3/O). The Master and 3/O were sitting beside each other on the starboard side of the bridge, the helmsman was on the steering console in the middle of the bridge, while the Pilot was next to the helmsman.

At about 16.46 LT, the *Soul Of Luck* was approaching the buoy No 3 and 4 with her average speed and heading as 8.2 knots and 176 degrees, respectively. She was about 1.4 NM from the container gantry crane No 03 (as shown in the Figure I-3).

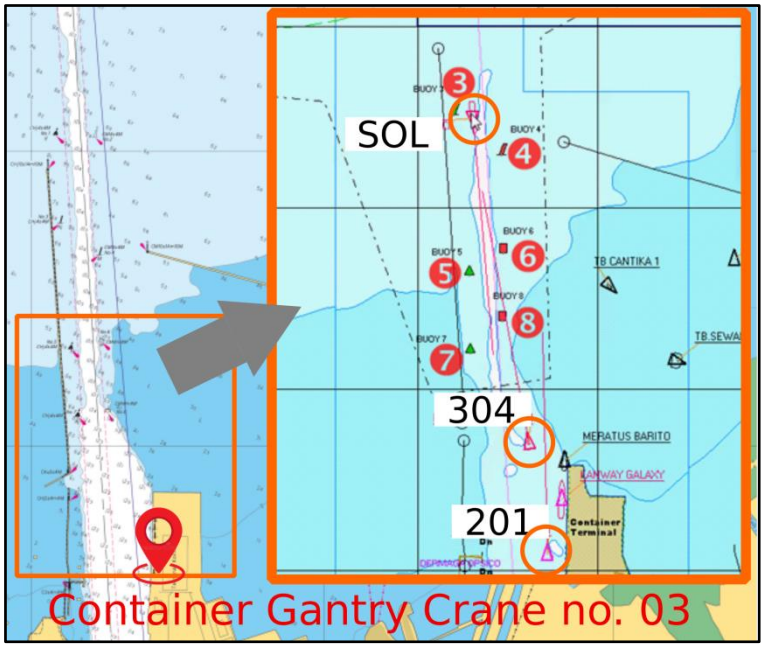

Figure I-3: The location of Soul Of Luck (SOL), Jayanegara 201 (201), Jayanegara 304 (304) and other buoys (numbered circles) at 16.46 LT (maps: Semarang VTS and Indonesian Nautical Chart No 91)

The Master ordered to reduce the speed from slow ahead to dead slow ahead. The Pilot asked the Master about the speed and course. The Master replied that the speed was dead slow and the course was steady (straight). The Pilot agreed and reminded the Master for not steering to the starboard.

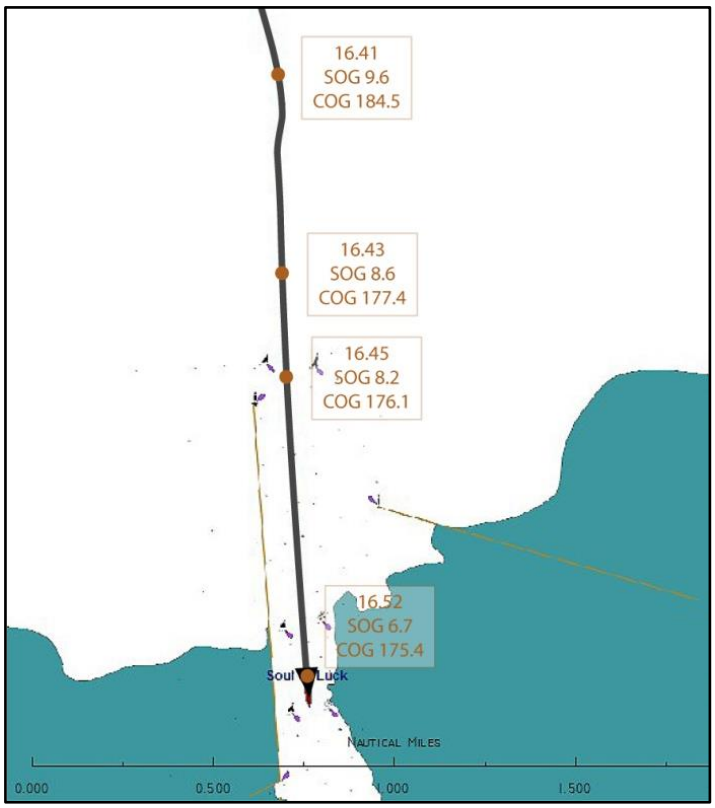

Figure I-4: The timeline of movement of Soul Of Luck

Quickly after, the Pilot asked the Master to stop engine. The Master repeated the suggestion as a closed-loop communication. Afterwards, the Master ordered the crew to stop the engine of *Soul Of Luck*.

Afterwards, the Master reminded the crew that the plan was to berth on the starboard side and be assisted by two tug boats. The crew responded positively to the message.

The Pilot reminded the Master of *Soul Of Luck* to be ready and asked him to stop the engine. The Master instantly ordered the crew to stop the engine. The order was confirmed by the crew. Afterwards, the Pilot told both tugs that the *Soul Of Luck*'s engine had been stopped. At the time, *Soul Of Luck*'s speed was decreasing gradually to 6.7 knots and the course was still the same. The Pilot asked both tugs to directly approach the *Soul Of Luck*. The *Jayanegara 304* replied to the Pilot's order.

Immediately after, the Pilot asked the *Jayanegara 304* to be at the fore of the *Soul Of Luck*. By the time, the *Jayanegara 201* was still approaching the *Soul Of Luck* behind the *Jayanegara 304*.

Figure I-5: The Jayanegara 201 was following the Jayanegara 304 (304) towards Soul Of Luck (SOL) (image: port side CCTV footage of Jayanegara 201)

At 16.51 LT, the *Jayanegara 304* told the Pilot that there was no crew on the forecastle of *Soul Of Luck* to receive the tug line of *Jayanegara 304*. The Pilot instantaneously asked the Master to urge the crew to be at the forecastle as soon as possible. The Master prompted the Pilot's request by asking the crew to quickly assist the *Jayanegara 304*. A ship crew soon replied the order by explaining that the crew was ready in the forecastle. Immediately, the *Jayanegara 304* was getting closer to the port side bow of the *Soul Of Luck*. By the time, *Soul Of Luck* was passing buoys No 5 and 6 and still unconnected to any tug boats.

At about 16.52 LT, the Pilot reminded the Master again for not altering to the starboard. The Pilot reminded the *Jayanegara 304* to be nearby the *Soul Of Luck* if the tug line works had been completed. The Pilot alerted both tugs that the time to turn the *Soul Of Luck* was about to come. The *Jayanegara 201* acknowledged it. The Pilot then asked the *Jayanegara 201* to standby and follow alongside the *Soul Of Luck* whilst waiting for the order from the Pilot. The *Jayanegara 201* agreed the Pilot's command. At the time, the *Jayanegara 201* was still approaching the *Soul of Luck*.

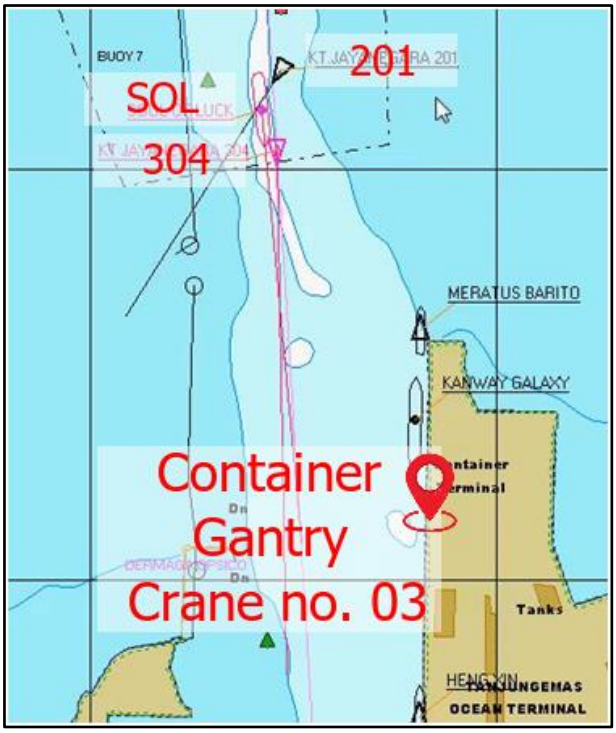

Figure I-6: The situation at about 16.53 LT

At about 16.53 LT, the *Jayanegara 201* was approaching the aft port side of *Soul of Luck*. Afterwards, she was positioned parallel with the *Soul Of Luck*. Shortly after, the tug line of *Jayanegara 201* was in progress to be connected to the *Soul Of Luck*'s aft port bollard. All three ships were around the buoys No 7 and 8.

At about 16.54 LT, the Pilot asked the Master hard to starboard. Rapidly, the Master of *Soul Of Luck* ordered the helmsman hard to starboard. A few seconds later, the *Jayanegara 201* informed the Pilot that the *Jayanegara 201*'s tug line was fast and ready to undertake the Pilot's command in assisting the *Soul Of Luck*. The *Jayanegara 201* was following alongside of *Soul Of Luck*. The *Jayanegara 201* finished making fast the tug line onto the *Soul Of Luck*. Whereas, the *Jayanegara 304* was still approaching the fore port side of the *Soul Of Luck*.

Figure I-7: Tug line of Jayanegara 201 (orange circle) was ready; Jayanegara 304's was still not ready (source: CCTV footage of Jayanegara 201)

Not long after the Master of *Jayanegara 201* reported the completion of work on the tug line, the Master of *Jayanegara 201* began a conversation to a crew on the bridge.

Figure I-8: The Master of Jayanegara201 was taking a mobile and took off the ship's console whilst having a conversation with a tug crew (source: CCTV footage of Jayanegara 201)

Afterwards, the Master of *Jayanegara 201* did something on the mobile phone by using his both hands. After about 40 seconds of being on the phone, the Master of *Jayanegara 201* checked the situation. The contact angle between the *Jayanegara 201* and the *Soul Of Luck* was slightly changing. Afterwards, the Master of *Jayanegara 201*adjusted the heading of *Jayanegara 201*. Right after it, the Master came back to the mobile and conversed with a crew member of the *Jayanegara 201* who was standing nearby. By the time, the *Jayanegara 304* was still approaching the *Soul Of Luck*.

Figure I-9: (a) The Master of Jayanegara 201 began to do something on the mobile phone; (b) the situation about 40 seconds later (images: CCTV footage of Jayanegara 201)

At about 16.57 LT, the Pilot urged the *Jayanegara 304* to immediately be alongside of the *Soul Of Luck*. A few seconds later, the Pilot ordered the *Jayanegara 304* to push the *Soul Of Luck* with her full power. In the next several seconds, the Pilot told the *Jayanegara 304* that the heading of *Soul Of Luck* was gradually turning to the port. The *Soul Of Luck*'s average speed and heading were 5.3 knots and 171 degrees, respectively. At this time, the heading of the *Soul Of Luck* was approaching towards the *Kanway Galaxy*, a container vessel which was

unloading containers. Many harbour workers were working around the *Kanway Galaxy*. The distance between *Soul Of Luck* and *Kanway Galaxy* was less than 0.1 NM.

At about 17.00 LT, the *Jayanegara 304* sent the tug line to the *Soul Of Luck*. The Master of *Jayanegara 304* told the Pilot that the tug line works were still in progress. Whilst waiting for the completion of the tug line works, the Pilot urged the *Jayanegara 304* to immediately push the bow of *Soul Of Luck*. About one minute later, the *Jayanegara 304*'s tug line was fast. The *Soul Of Luck*'s average speed and heading were 5.2 knots and 168 degrees, respectively.

Shortly after, the Pilot asked the *Jayanegara 304* again to push the *Soul Of Luck*. The Pilot also asked the Master again hard to starboard. The Pilot repetitively ordered the Master of *Jayanegara 304* to push in full power to which they replied, saying that he was working on it.

Next, the Master the *Soul Of Luck* ordered half astern to the crew. That order was followed by the Pilot's order to the *Jayanegara 304* to keep pushing the *Soul Of Luck*. The *Jayanegara 304* replied that the she was pushing with her full power. Again, the Pilot urged the *Jayanegara 304* to keep pushing the *Soul Of Luck* perpendicularly.

In the meantime, the engine crew of *Soul Of Luck* reported to the Master that the main engine control system failed to respond to the astern order. The Master insisted that the engine should run astern because the distance towards the *Kanway Galaxy* was getting closer. The engine crew then asked permission to set the astern engine manually. However, after three attempts, it was still unsuccessful. The engine crew and Master shouted to each other in Russian that the engine did not work properly. The Master warned the crew again that the *Soul Of Luck* was adrift. Meanwhile, the Pilot kept urging the *Jayanegara 304* to push the *Soul Of Luck*. The *Soul Of Luck*'s average speed and heading were 3.5 knots and 133 degrees, respectively.

Knowing the conversation with a high intonation amongst the Master and the ship crew, the Pilot understood that there was an issue with the engine of the *Soul Of Luck*. The Pilot immediately ordered the *Jayanegara 201* to pull the *Soul Of Luck*. Following the pull order, the Master of *Jayanegara 201* put down the mobile phone and began to pull the *Soul Of Luck*. The Pilot repeated the order several times. The *Jayanegara 201* then acknowledged the order.

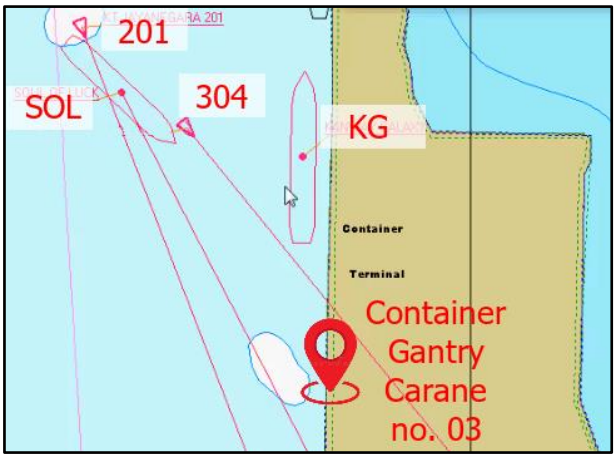

Figure I-10: The Jayanegara 201 (201) was pulling and the Jayanegara 304 (304) was pushing whilst the Soulf Of Luck was approaching the Kanway Galaxy (KG) (image: Semarang VTS)

Shortly after the command to pull the *Soul Of Luck*, the *Jayanegara 304* asked the Pilot whether the *Jayanegara 304* also made a pull or keep pushing the *Soul Of Luck*. The Pilot once ordered the *Jayanegara 304* to pull, but afterwards he revised the order to keep pushing the *Soul Of Luck*. The Pilot repeated the order to the *Jayanegara 304* to push the *Soul Of Luck* and to the *Jayanegara 201* to pull the *Soul Of Luck*. The *Jayanegara 304* asked again whether

the *Soul Of Luck* should be pulled or pushed. Replying to the request, the Pilot insisted the *Jayanegara 304* to keep pushing the *Soul Of Luck* with the highest power and to push the *Soul Of Luck* perpendicularly. The Pilot repeated the order to the *Jayanegara 201* to pull back the *Soul Of Luck*.

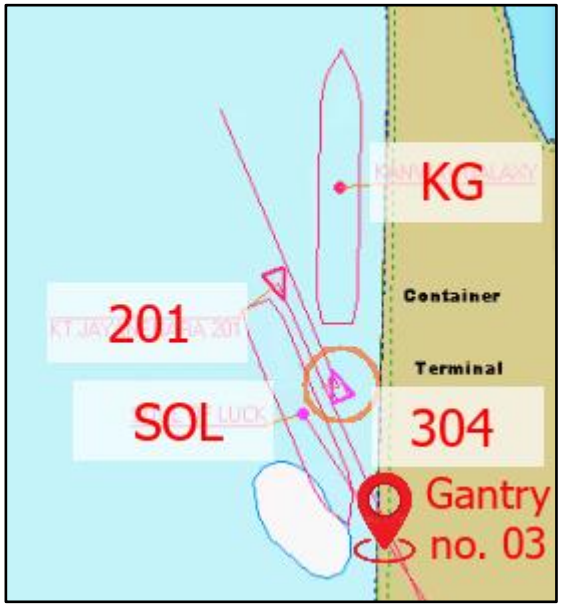

Figure I-11: The Jayanegara 304 (304 with orange circle) whilst fleeing away from the Soul Of Luck (SOL)

By then, the *Soul Of Luck*'s heading gradually changed to 146 degrees. The *Jayanegara 304* asked the Pilot to get the permission to escape. Nonetheless, the Pilot insisted to ask the *Jayanegara 304* to keep pushing the *Soul Of Luck*. At the same time, the Master of *Soul Of Luck* ordered the forecastle crew to let go of the tug line.

Notwithstanding the pilot order was to push the Soul Of Luck, the Master of *Jayanegara 304* disagreed the request because the *Jayanegara 304* was too close to the wharf. Right after the *Jayanegara 304*'s explanation about the situation, the Pilot ordered the *Jayanegara 304* to go away from the *Soul Of Luck*. The Pilot repeated the order to the *Jayanegara 201* to pull the *Soul Of Luck* with the full power.

At the same time, the engine crew of the *Soul Of Luck* made several attempts to address the engine control issue. Several times the engine control could not be operated to move astern, but always worked successfully in moving ahead. The efforts were seen by some crew of tug boats as theshipwakescreated bypropellers of the *Soul Of Luck*. The wakes were not continued as the trial made by the engine crew weretaken several times in an instantaneous testing.

A few seconds later, the fore of *Soul Of Luck* hit the container gantry crane No 03. As a result, the gantry rapidly collapsed. Some trucks and containers underneath the gantry crushed by the crane.

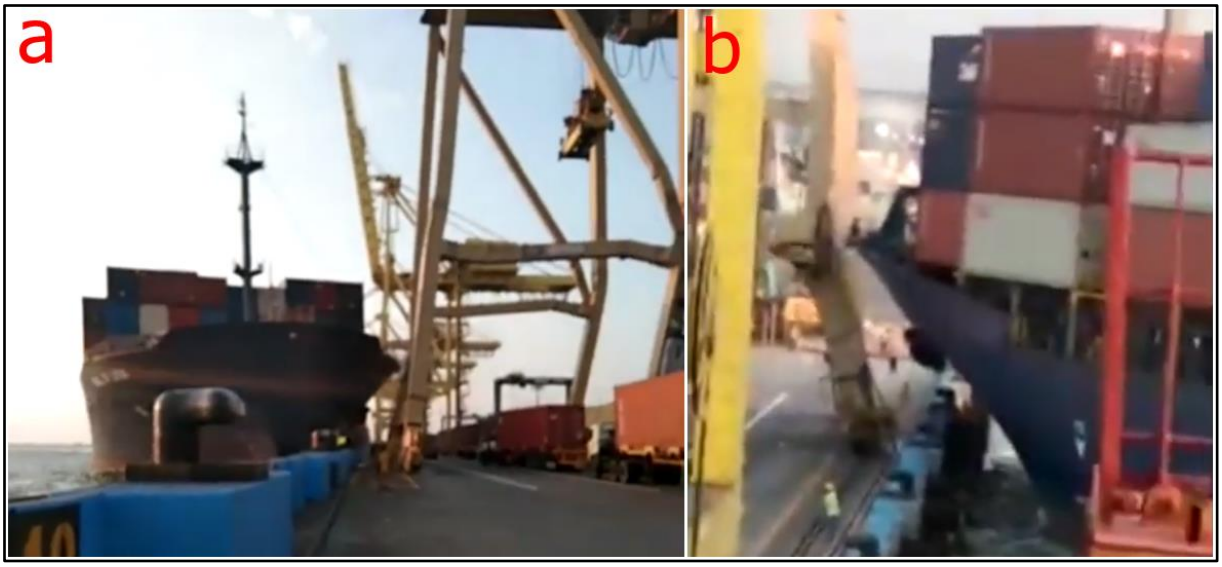

Figure I-12: Photos taken by port workers from the wharf (a) and Kanway Galaxy (b) whilst the Soul Of Luck hit the container gantry crane No 03

After the allision, the *Soul Of Luck* was keep moving towards another container ship in front of her, named *Ceria 8*. Knowing the propeller of the *Soul Of Luck* was kicking towards ahead, the Master of *Jayanegara 304* informed the situation to the Pilot and reminded that the *Soul Of Luck* was keep moving forwards.

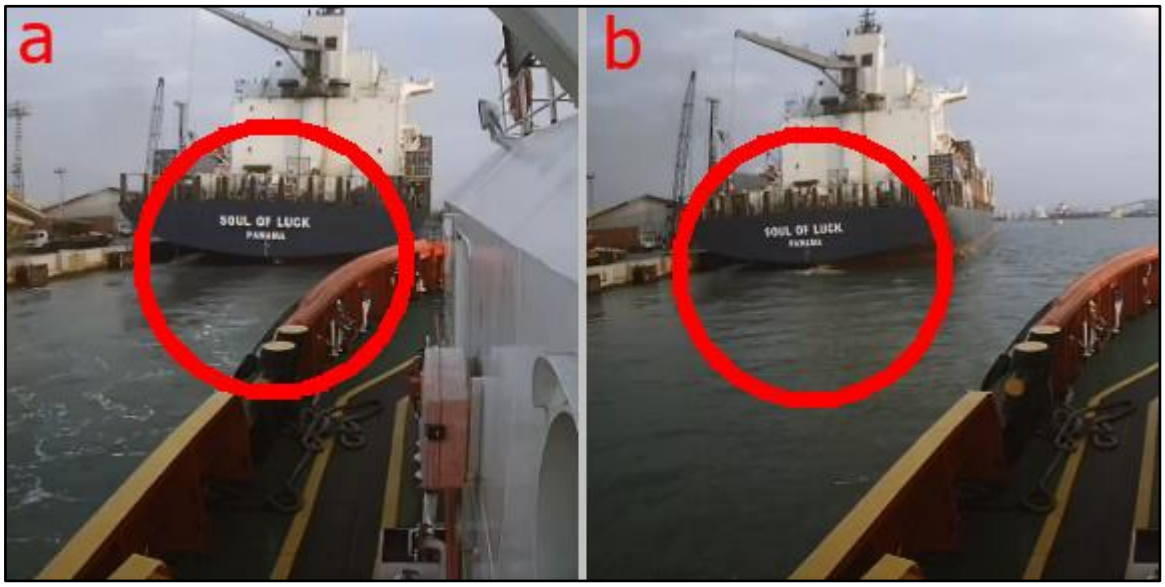

Figure I-13: Sample of no wakes (a) and wakes (b) behind the Soul Of Luck

The *Jayanegara 201*, which was pulling the *Soul Of Luck*, was dragged towards the shore. At the time, the tug line of the *Jayanegara 201* was right on the edge of the aft port side of the *Soul Of Luck*. Soon after, her tug line was cut off.

At about 17.03 LT, the *Jayanegara 304* successfully made fast on the bollard of starboard bow of *Soul Of Luck*. The Master of *Jayanegara 304* reported about this to the Pilot. The Pilot asked the Master to stop the engine. A few seconds later, the Master asked the engine crew to stop the engine control trial.

The Master ordered the helmsman to steer the *Soul Of Luck* hard to starboard. Her heading slightly changed. As the consequence, the *Soul Of Luck* grazed the port side hull and railings of the *Ceria 8*. This cut off all of the berthing lines of the *Ceria 8*. Afterwards, the *Ceria 8* dragged by *Soul Of Luck* towards south. They were approaching an oil tanker vessel, named *Heng Xin*.

Figure I-14: The Soul Of Luck wilst contacted the Ceria 8

A few seconds later, the starboard aft of *Ceria 8* hit port fore railing of *Heng Xin*. The *Heng Xin* held the *Ceria 8*, so that the *Ceria 8* suddenly stopped. In the mean time, the *Soul Of Luck* was still moving away from the *Ceria 8*, but the *Soul Of Luck*'s speed was significantly reduced to 0.8 knots.

The Pilot then asked the agent of the *Soul Of Luck* whether the ship would be freed to go or be berthed on the wharf. The agent asked the Pilot to let the *Soul Of Luck* proceed in the unloading of the containers as previously planned. The Master agreed to the idea and then led the berthing process.

At about 17.39 LT, the *Soul Of Luck* completely berthed on the wharf of the container port, right next to the collapsed container gantry crane No 03.

I.2. THE AFTERMATH

On the shore, the allision resulted an injury and devastation on the wharf area. A truck driver who was inside the truck cabin suffered a minor injury. After undertook a treatment in the hospital, the truck driver was permitted to go home. There were no other reports of fatalities or injuries on the gantry operator.

The massive destructions were seen on the container gantry crane No 03, a few container trucks and several stacks of containers nearby the collapsed gantry. There were no reports related to the crack of the wharf construction due to the incident.

There were two ships suffered damage due to hit by the *Soul Of Luck*. The port side of *Ceria 8* had an extensive damage on the hull, railing, and construction. Her berth lines were cut off. The astern was also damaged after contact with the *Heng Xin*. Meanwhile the *Heng Xin* only had a light damage on her railings which required repainting. Whereas, the *Soul Of Luck* had a damage on her port side hull.

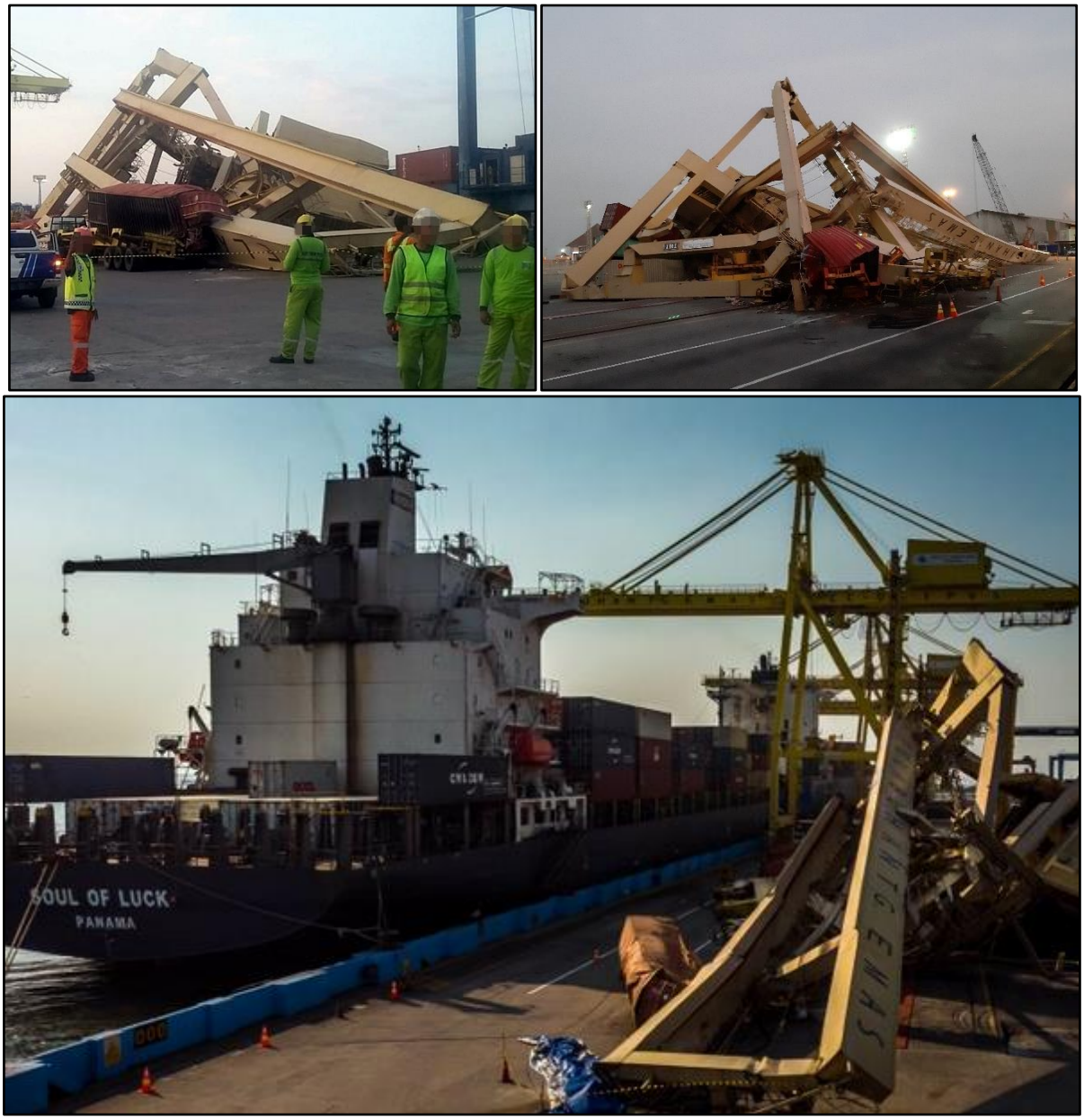

Figure I-15: The ruined container gantry crane No 03

However, the port service was declared normal within three hours after the incident. There was no damage on the rubber tyred gantry cranes (RTG) which was located several metres from the collapsed gantry. The other gantries also had a normal function as before the incident. Therefore, the services for container and tanker ships were continued.

Figure I-16: Scratch on the Soul Of Luck's aft port side hull

I.3. SHIP INFORMATION

I.3.1. Ship Detail

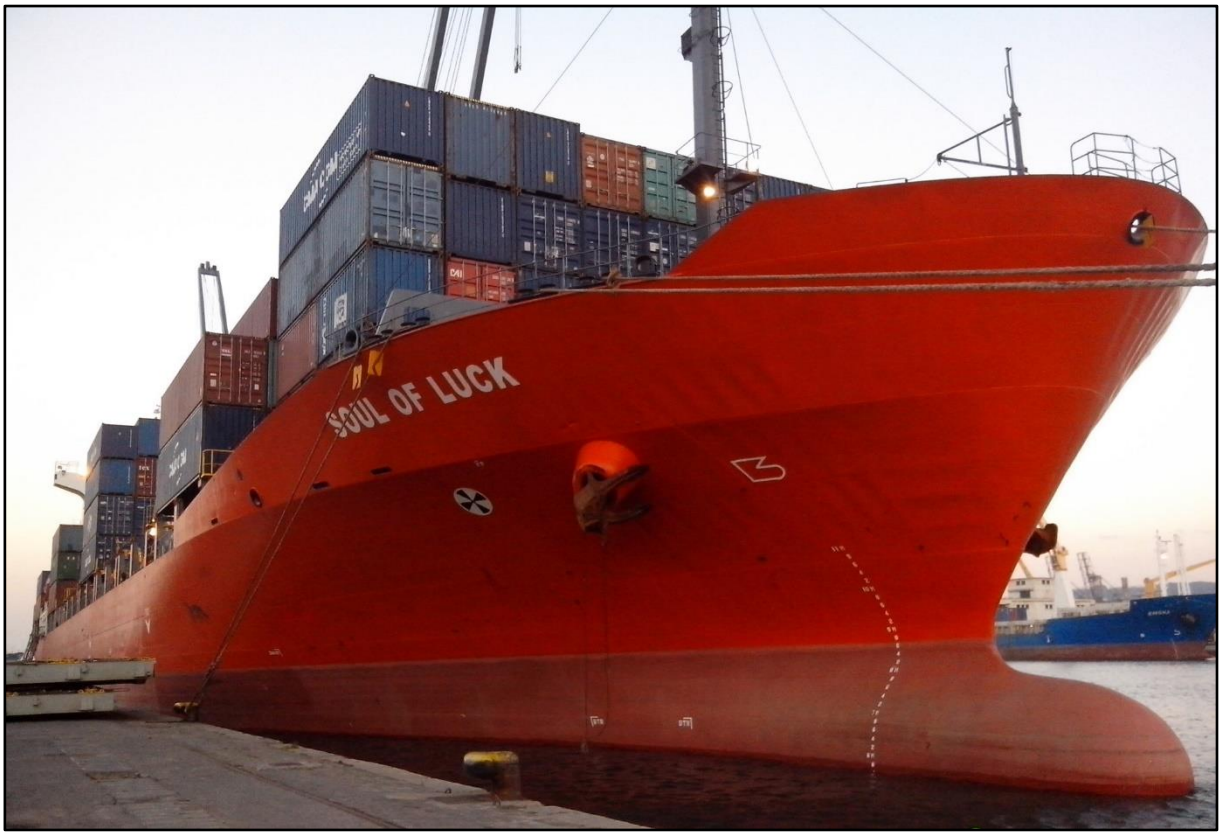

Figure I-17: Soul Of Luck (image: Fleetmon)

Soul Of Luck (IMO 9148647) was a container ship which registered in Panama with gross tonnage of 16,915 and deadweight of 21,519 tons. The steel ship built by Hanjin HI Co. Ltd. in 1997 in South Korea was owned by Victoria Oceanway Ltd. (managing owner) and Osier Holding S.A. (registered owner), while her operator was Gold Star Line Ltd. At the time of the incident, she was classed with Nippon Kaiji Kyokai (NK).

Her dimensions of length overall, length perpendicular, depth and breadth were 168.05, 159.62, 13.80 and 27.20 m, respectively. The vessel, formerly named *Hansa Catalina*, had a total capacity of 1,645 TEUs[2] in her cargo holds (610 TEUs in 7 cargo holds and 1,035 TEUs on deck) with the maximum summer draft of 9.215 m.

The bridge of *Soul Of Luck* was equipped with a set of navigational equipment which complied with the SOLAS requirements. This included a gyro autopilot, ARPA equipped radars, Automatic Identification System (AIS), Global Positioning System (GPS) plotter, Electronic Chart Display and Information System (ECDIS), echo sounder, VHF radios, satellite telephone and a Kevin Hughes Simplified Voyage Data Recorder (S-VDR).

Figure I-18: The bridge of Soul Of Luck

I.3.2. Engine System

Her main engine was a two-stroke diesel engine brand of MAN B&W 6S60MC which could produce a total power of 12,240 kW[3] (16,414 HP[4]) at 105 rpm[5] to drive a fixed pitch propeller (4 right-handed blades). This would provide a service speed of 18.5 knots. She was equipped with 3 auxiliary engines in which each engine generated electric power of 600 kW.

The engine of *Soul Of Luck* can be either controlled directly from the bridge or from the Engine Control Room (ECR), in a usual practice. In the first mode, the ship becomes the Unmanned Maritime Systems (UMS) in which the control of the engine was fully from the bridge. The role of engine crew has been minimised significantly without watch-keeping personnel assigned specific duties of operation and surveillance. Refer to the Rules for Automatic and Remote Control Systems (Nippon Kaiji Kyokai, 2020), the *Soul Of Luck* was categorised into the UMS M0 which means that her main engine monitoring was centralised.

In the second mode, this was usually when the vessel was in manoeuvre, as in the average vessels. The engine order was given by telegraph from the bridge, but the control was switched

[2] Twenty-foot equivalent unit.

[3] Kilo watt.

[4] Horse power.

[5] Revolutions per minute.

from the bridge to the ECR. The main engine of *Soul Of Luck* was controlled from the ECR. The main engine control used the pneumatic system located next to the engine telegraph. The electrical signal comes from the ECR console.

To control the air system, the Rexroth brand of pneumatic valves were used onboard the *Soul Of Luck*. The 7-bar air system was used for several purposes on the engine. Based on the explanation from the engine manufacturer, those valves were not categorised as main engine parts. The pneumatic system has its own maintenance treatment and schedule, apart from the maintenance of main engine.

Based on the Instruction Book Volume 5, Manoeuvring System of MAN B&W 6S60MC Engine, the switching between the bridge and ECR can be made during either stop or running condition in an easy and quick mechanism. In the stop position, the switch would be no issue. Whereas, the switch from the bridge to the ECR in the running mode might result a sudden adjustment of the engine speed due to the difference of speed order between both control locations.

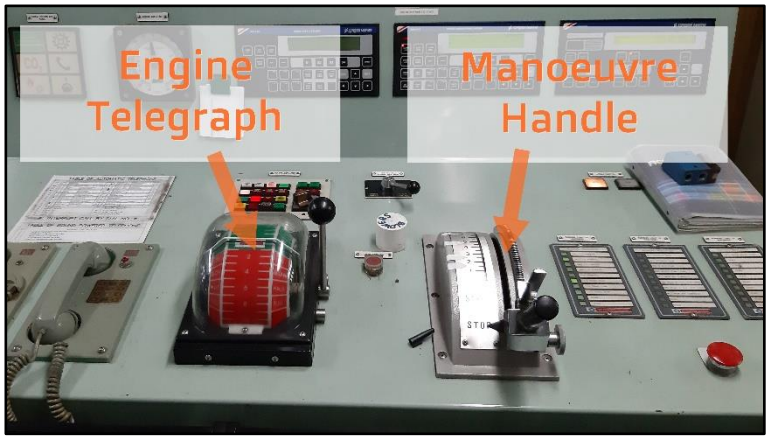

Figure I-19: Engine console of Soul Of Luck

In the Manual position, the engine is controlled from the Engine Side Console in the ECR by the push buttons of START, STOP, and the AHEAD/ASTERN. The speed is set by the 'Manual speed setting' on the hand wheel.

The *Soul Of Luck*'s engine is based on a mechanical camshaft system for activation of the fuel injection and the exhaust valves. The engine is provided with a pneumatic manoeuvring system which transmits orders from the separate manoeuvring consoles to the engine. The starting valves are opened pneumatically by control air from the starting air distributor(s) and closed by a spring. Each cylinder is equipped with its own fuel injection pump, which consists of a simple plunger activated by the fuel cam directly.

Ahead or astern movement depended on the rotation direction of the propeller. Clockwise rotation would produce ahead movement, while anti-clockwise rotation would produce astern movement. The slow speed engine of *Soul Of Luck* used the direct manoeuvring system to reverse the propeller rotation.

There are two systems to switch the rotation of propeller from ahead to astern and vice versa. First, the indirect manoeuvring system changes the movement of the ship without changing the rotation of the engine. For example, if the piston rotates clockwise, the piston will still rotate like that until the engine is shut down. The only change is on the propeller rotation by using reverse coupling in the gear box. There are two couplings, specifically ahead coupling and astern coupling.

Second, the direct manoeuvring system on a two-stroke main engine needs a transition to switch from ahead to astern movement and vice versa. This system makes the engine piston should completely stops to switch between two opposite movement. After the piston stops, it would rotate to the opposite direction. The camshaft will change the injection, exhaust and scavenging timing. This system installed on the *Soul Of Luck*.

Whilst the propeller of *Soul Of Luck* rotates clockwise, she was moving ahead. Otherwise, if the propeller rotates anti-clockwise, she was moving astern. The propeller shaft is directly connected to the main engine's crankshaft without the gear box. Therefore, the rotation of the propeller was the same as the rotation of crankshaft.

The camshaft types needed in the engine operation depended on the engine order. If the order is ahead, the ahead fuel cam would be engaged. Otherwise, the astern fuel cam would be engaged. Those fuel cams are located adjacent.

I.3.3. Bow Thruster

In the absence of the tug boats, the *Soul Of Luck* could use her bow thruster. With a maximum power of 700 kW (938 HP), this allows her to manoeuvre at a very low speed (Guangxing et.al. 2015) and hover in currents. The bow thruster was designed reversible, so that the vessel may be maneuvered in either port or starboard directions.

One of factors determine the effectiveness of bow thruster is the speed of vessel. The lateral thrust of the bow thruster decreases when the velocity of the vessel beyond 2 knots (Australian Transport Safety Bureau, 2007; Beauchamp & Krol William P., 2007; and The Standard P&I, 2012). A set of research conducted to disclose this phenomenon which was called the Coanda Effect (Dang & Laheij, 2003). The results confirmed that the forward velocity on the vessel significantly boosts the velocity of water through the thruster propellers. This leads to the loss in side thrust of the vessel.

The rudder works otherwise. The ahead speed gives the benefit to the function of the rudder. When the speed is entering the navigable speed, the rudder plays its role as the controller of ship's direction. Otherwise, the rudder does not work at a very low speed (Hassani, Steen and Rudaa 2016).

I.3.4. Pneumatic System

All systems in the *Soul Of Luck*'s main engine were controlled by the pneumatic system. The pneumatic system utilises compressed air to empower mechanical motion based on the principles of fluid dynamics and pressure. The system was comprised of interconnected set of subsystems, such as an air compressor, transition lines, air tanks, hoses, cylinders, and air or gas as the fluid.

The pneumatic system was connected to the handle of manoeuvring system in the ECR. There were two pilot valves of maneouvring system for ahead and astern. When the handle was in ahead position, the ahead pilot valves of maneouvring system would open the air to the pneumatic control system to start the engine in ahead rotation and vice versa.

At the accident of *Soul Of Luck*, when the handle of maneouvring system was positioned to astern, the control system did not work. The engine crew found that the pilot valve of maneouvring system for astern had a leakage. Therefore, the air was wasted out of the system. The leakage made the system had insufficient power to switch the engine to the astern position.

After the accident, the engine crew switched the engine control from ECR side to the engine side. The testing used the replacement of pneumatic valve was successfully done.

I.3.5. Planned Maintenance System

Planned Maintenance System is a system set by the ship owner or ship operator to carry out planned maintenance activities in certain intervals according to manufacturers and classification requirements. The system could be implemented on either a paper, software or combination of both. Since the systems in the machinery are complex and involve a number of components, a comprehensive maintenance system requires a record system to be placed in a good order.

The International Safety Management (ISM) Code requires a thoroughly Planned Maintenance System. This means the identification of equipments and technical systems that may cause critical situation is a must, such as sudden operational failure on the main engine. The system also needs to state clearly about regular testing, continuous recording of stand-by equipment and technical systems. The identification enables the classification of the equipments and components in machinery aspect, so that the engine crew have the ability to check the appropriate components as a priority.

The need of checking and maintaining the critical elements in machinery systems have been stated in the Clause 10.3 of the ISM Code as follows.

> *"The Company should establish procedures in its SMS to identify equipment and technical systems the sudden operational failure of which may result in hazardous situations. The SMS should provide for specific measures aimed at promoting the reliability of such equipment or systems. These measures should include the regular testing of stand-by arrangements and equipment or technical systems that are not in continuous use".*

A regular testing of continuous or non-continuous engagement is required by the ISM Code to ensure an engine performance as expected by the engine crew. Otherwise, the absence of the periodical test might lead to a disastrous situation when the ship engine is in a trouble.

There are two types of records which should be done according to the ISM Code. First is the externally-generated records. The reports issued by classification and port state control are some example of records in this category. Another type is the internally-generated records. The engine performance, testing, failure, change of condition are in this record. To sum up, the internally-generated record requires a complete and monitored situation of engine systems.

In the operational level, there are many options that the company could select some of them as the appropriate ones to be applied for the engine systems. They are total productive maintenance, planned maintenance, preventive maintenance, reactive maintenance, predictive maintenance and reliability-centred maintenance. Each of them has a specific consequence related to the maintenance schedule which in turn will affect the operational of the ship.

In selecting the maintenance method, the ISM Code provides a set of guidelines as follows.

i. the maintenance recommendations and specifications of the equipment manufacturer;
ii. the history of the equipment, including failures, defects and damage, and the
iii. corresponding remedial action;
iv. the results of third-party inspections;
v. the age of the ship;

vi. *identified critical equipment or systems;*
vii. *the consequences of the failure of the equipment on the safe operation of the ship.*

I.3.6. Standard Operational Procedure of Ship Crew

The company issued the Standard Operational Procedure (SOP) for the crew of *Soul Of Luck* named Safety Management System (SMS) Manual as a part of the International Safety Management (ISM) Code requirement. The documents which authorised by the Designated Person Ashore (DPA) and approved by the general manager demonstrated how respective crew should do their works based on the authority and tasks. In terms of the ship's operation, the Master and Chief Engineer had more authority to manage the crew.

The procedure asked the Master to do several tasks prior to the beginning of any voyage as follows.

a. *The technical and navigational readiness of vessel for the safe sailing.*
b. *Crew manning and all kinds of supplies, bunkers necessary for the forthcoming voyage, and readiness of vessel's cranes, hatch covers and cargo holds where the intended cargo for this voyage will be safely loaded, carried and discharged.*

More specific in regards the arrival/departure to/from the port, the procedure asked the Master to undertake these actions.

a. *To be in command on the bridge and personally navigate, manoeuvre the vessel, taking all precautionary steps.*
b. *To ensure the engine/s must be ready for any change of regime of operation, reverse and anchors to drop.*
c. *To take a Pilot during navigation where is required/compulsory. The Master has the right to take Pilot for the safety reason, if he finds this necessary, even in areas where Pilot is not compulsory.*
d. *To ensure the safe embarkation of the Pilot onboard the vessel and his safe disembarkation from the vessel. After embarkation of Pilot on board of vessel, the Master is obligated to provide vessel's "Pilot Card" to the Pilot, ship particulars and familiarize the Pilot with manoeuvering characteristics of the vessel and special features of operation, navigation of the vessel; the way of giving orders to the Helmsman and tugs must be agreed timely, the Pilotage plan and scheme of berthing and un-berthing must be provided at any time.*

The procedure also gave a special attention to the Master as follows.

The presence of the Pilot on the Bridge does not release the Master from his responsibility to control the vessel during pilotage. In case of improper, dangerous actions of the Pilot, the Master shall release the Pilot from piloting the vessel and to perform navigation and maneoeuvering independently or require the replacement of the Pilot. In this case, the Master has to report to Port Authorities, ask for Pilotage plan, scheme of berthing and unberthing and make a record in the Bridge log-book.

The SOP also detailed the responsibility of the Chief Engineer, who named by the SOP as the Deputy to the Master, as follows.

a. *To plan and execute works of maintenance and repair, efficient use of spare parts and stores, fuel oil, lubricants and fresh water.*

b. *To ensure the operation of vessel's technical equipment in strict correspondence with operational and Maker's System, Circulars and Instructions of Flag State and the Company.*
c. *To ensure the compliance with safety regulations, safety rules and instructions by crew and shore personnel during maintenance and repair of ship's equipment.*
d. *To plan works for maintenance and repair of vessel, organisation of work and rest of engine room crew, organising watches and duties.*
e. *To ensure the operation of ship's cranes, timely control of their condition, replacement of oil in the hydraulic systems and gear boxes of ship cranes.*
f. *To ensure the readiness of fire and discharge pumps and systems, working condition of fire prevention devices.*
g. *To manage engine room crew during ship's drills.*
h. *To prepare the vessel for Class, Flag and Port State Control inspections.*
i. *To prepare repair specifications, control the quality of works carried out by shore-based technicians and by ship specialists.*
j. *To control time to order and supply of safety items, stores and spares, storage and consumption of fuel oil, lubricants and fresh water for the needs of engine room.*
k. *To control the main engine during entering port, departure and during mooring operations.*
l. *To present at the control room when the control of main engine is on the bridge during entering port, departure, mooring operations and passage of narrow waters.*
m. *To inform immediately the bridge when there is a delay of execution of bridge's order.*
n. *To check daily the records in the engine log book and oil record book as well as to sign them and to ask Master's signature.*
o. *To fill up and submit plans and reports to the company as per Company's Safety Management System (SMS) in specified intervals.*
p. *To confirm the readiness of engine and all machinery 15 minutes prior to the departure and report it to the Master together with the Chief Officer.*
q. *To stop or take out of operation any equipment if this does not affect the safety of the vessel or disturb its normal operation.*
r. *To reduce speed or stop main engine to prevent an accident or rectify its consequences in necessary cases.*
s. *To act at the Chief Engineer's discretion in the special emergency cases and impossible to obtain timely permission, and then report the steps taken to the Master.*

I.3.7. Standard Operational Procedure of Emergency Situation

In regards the crisis circumstance, the company also prepared the emergency response checklists as the appendix of the SMS Manual. At the time of the accident, there were 11 situations covered by the checklists as follows.

1. Stranding/grounding.
2. Fire and/or explosion.
3. Collision.
4. Main engine failure or steering gear failure.
5. Loss of power.
6. Gyro compass failure.
7. Bridge control/telegraph failure.
8. Man overboard.
9. Piracy/terorism.

10. Abandon ship.
11. Flooding.

Amongst those checklists, there was no specific checklist in regards to the malfunction of engine control. The closest situation to the engine control failure was the checklist of the engine failure which was described as follows.

a. Call Master.
b. Take action to manoeuvre ship away from danger.
c. Prepare for anchoring if in shallow water.
d. Check other vessels in close proximity.
e. Plot vessel's position and pass it to radio room.
f. Assess weather, current and drift.
g. Note time of breakdown.
h. Exhibit "not under command" shapes/lights.
i. Commence sound signalling.
j. Broadcast urgency messages to ships in the vicinity, if appropriate.
k. Modify AIS status message to communicate relevant information.
l. Inform Vessel Traffic Service (VTS) or Port Authority if in controlled or similarly monitored waters.
m. Establish cause of breakdown.
n. Establish if repairs are possible by vessel's staff.
o. Establish time required by repairs.
p. Establish if shore assistance is required.
q. Enter facts in log book.
r. Inform company head office.

I.4. CREW OF SOUL OF LUCK

There were 19 multinational crew members who worked onboard the *Soul Of Luck*. They were Russians, Indians and Filipinos. Most of them worked less than one year onboard the *Soul Of Luck*. The ship regularly visits Indonesian ports (Tanjung Emas Port in Semarang and Tanjung Perak Port in Surabaya) and a Malaysian port (Port Klang Port in Selangor) monthly.

The Master who held the master certificate had been working more than 1 month onboard the ship prior to the incident. He was familiar with the Tanjung Emas Port as it was not his first time of his visit to Semarang.

The Chief Engineer (CE) had been working for more than 7 months onboard the ship. At the first time the CE onboard, the CE had undertaken a familiarisation about the engines and surrounding. Prior to work onboard the *Soul Of Luck*, the CE had worked on the other container ships.

I.5. THE REGULATION OF PILOTAGE AND TOWING

The Indonesian regulation regarding the pilotage is currently under the Ministerial Regulation by the Minister of Transportation No 57 Year 2015 on Pilotage and Towing. The regulation has enacted several substantial matters regarding the pilotage waters, pilot boarding ground, Pilot, pilotage and towing services and authorisation of those services as well as supervision and evaluation of pilotage services.

The article 46 and 47 of the ministerial regulation above-mentioned stipulate a few points regarding the oversight of the pilotage services. The local Harbour Master should undertake this function. The article 46 requires the local Harbour Master to establish a set of system and

procedure of services of pilotage and towing. Further, the article 47 enables the local Harbour Master to appoint someone or some people to undertake the function of oversight subject to the rules of the Directorate General of Sea Transportation (DGST), Ministry of Transportation.

The Article 48 of the ministerial regulation stipulates several points regarding the evaluation. First, there are two types of the evaluation, particularly periodical and authorised evaluation. The periodical evaluation should be undertaken by local Harbour Master together with Port Authority every six months. This evaluation should include the safety and services of pilotage and towing. Whereas, the authorised evaluation means an evaluation undertakes by the DGST. The article also mentions that the DGST should set up detailed rules in regards to the details of evaluation of minimum standard of pilotage and towing services.

The unofficial translation of aspects that should be included in the periodical evaluation are as follows.

a. *Compliance and conformity of permits/certifications of navigation equipment and pilotage.*
b. *Human Resources.*
c. *Performance of pilotage and towing services.*
d. *Fulfilment of performance standards of pilotage and towing services.*
e. *Payment of tax.*
f. *Consistency of monthly reports and data.*

I.6. TANJUNG EMAS PORT ON INDONESIAN NAUTICAL CHART

The anchorage areas in Semarang Waters had been enacted in the Ministerial Decree of the Minister of Transportation No KP 475 Year 2015 on Determination of Marine Channel, Routing System, Navigational Regulations and Anchorage Areas in Tanjung Emas Semarang. This ministerial decree later was quoted in the Official Regulation by the Harbour Master of Tanjung Emas No KP.105/06/07/KSOP.Tg.Emas-16 on Procedures of Pilotage, especially the important points related to the marine traffic in Semarang waters. For example, the Pilot Boarding Ground, Pilotage Waters and anchorage areas.

The Indonesian Nautical Chart No 91 issued in 2019 has covered the anchorage areas and the PBG in Semarang waters. The chart showed two maps in one page, specifically the Channel on the left side which has the anchorage areas and the PBG. Whereas, the area of Tanjung Emas Port was located on the right side with the lack of features as on the left, but in the zoom-in scale. Both maps have provided navigational features, for instance the navigational buoys and the break water.

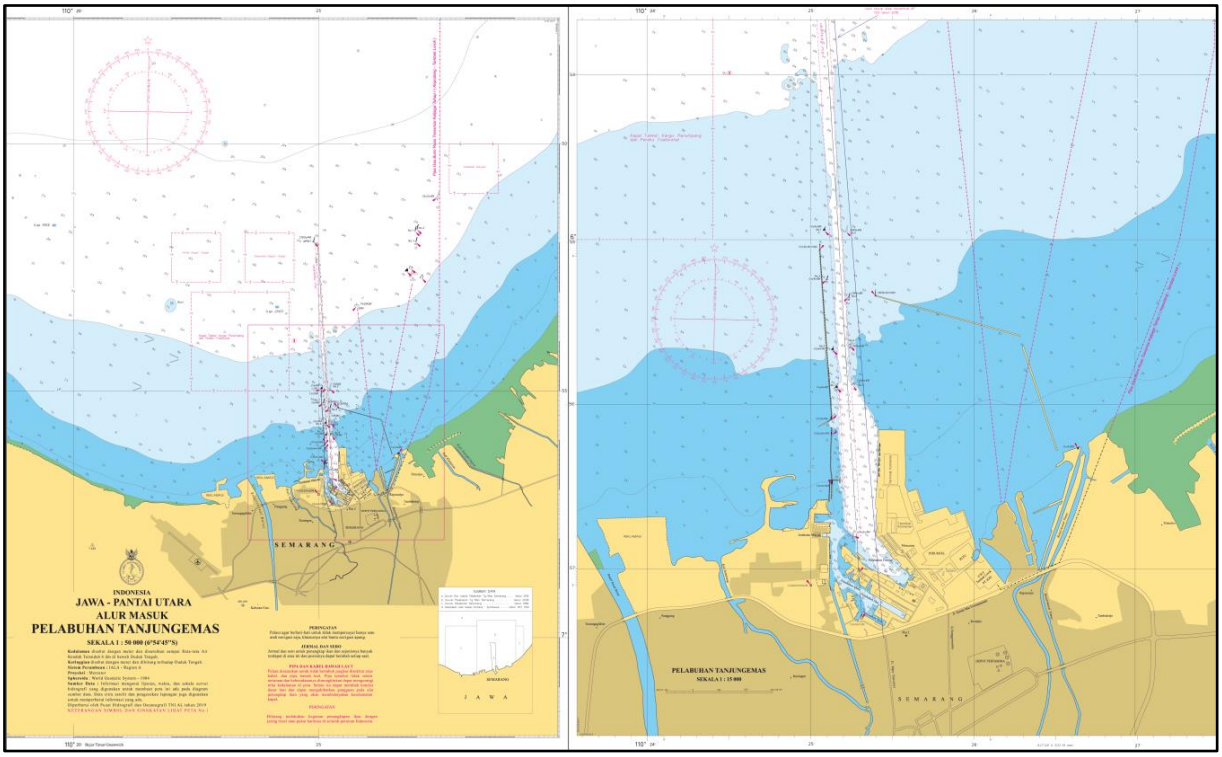

Figure I-20: The Indonesian Nautical Chart No 91

I.7. TANJUNG EMAS PILOTAGE SERVICES

Referring to the Ministerial Regulation by the Minister of Transportation No 18 Year 2013 on Master Plan of Tanjung Emas Port (formerly named Semarang Port) and the Ministerial Decree by the Minister of Transportation No KP. 475 Year 2015 on Regulations of Determination of Channel, Routing System, Navigational and Anchorage Areas in Tanjung Emas Semarang, Semarang waters is categorised as Class I mandatory pilotage area. Therefore, all ships with 500 GT or above —either inbound, outbound or shifting in the channel or basin— should be assisted by a Pilot. Tug boats are usually needed to assist the ship movement.

The Directorate General of Sea Transportation, Ministry of Transportation defined channel specification and port basin area in the Tanjung Emas Port area. The Channel of Tanjung Emas has an average width and depth of 175 m and -9 mlws[6], respectively. Port basin of 5.6 hectare in Tanjung Emas Port is a vital need for berthing and shifting ships. Referring to the Ministerial Decree by the Minister of Transportation No KP 475/2015, the width of the Channel of Tanjung Emas was 100 m. The maximum length of the ship to be able visiting the port – based on the 2012 master plan– was 89 m.

In providing the towing and pilotage services, there were two companies involved. The PT Pelabuhan Indonesia III (Persero) Branch of Tanjung Emas (Pelindo Tanjung Emas/PTE)

[6] The height of mean low water springs (mlws) is the average throughout a year of the heights of two successive low waters during those periods of 24 hours (approximately once a fortnight) when the range of the tide is greatest.

provided the Pilots[7], while PT Pelindo Marine Service (PMS) provided the tug boat(s), pilot boat as well as the tug crew.

I.7.1. Vessel Administration System

The vessel services in Indonesian ports consists of two systems, specifically Inaportnet and Vessel Administration System and Automation (VASA). The Inaportnet is a system developed by the headquarters regulator to provide the information about ship scheduling (berthing, sailing, clearance), electronic manifest, terminal services payment and cargo management system (cargo scheduling and tracking). However, due to the Inaportnet was available for Tanjung Priok Port, Jakarta only, the vessel administration system in the PTE relied on the VASA system only.

The VASA is the vessel services application developed by PT Pelabuhan Indonesia III. The system applied in all Pelindo III's ports, including at the PTE. The services which covered by VASA are pilot, tug boat, administration, towing and water. Further, the system bound the PTE and PMS in delivering services, such as piloting, un/berthing and un/loading the containers. VASA is planned to deliver a standard practice from the service providers to users in the scope of plan, document and execute the services.

Based on the information from the VASA manual, the VASA system enables the real time and integrated monitoring system. AIS monitoring, for example, is planned to detect and control vessels in Semarang waters. The system also allows the Portable Pilot Unit (PPU) to present the information about the administration as well as information regarding weather and navigational information in the channel.

The flow of the service begins from request(s) as well as pertinent documents which should be submitted by a ship agent to the VASA system. The submission should be no less than 24 hours before the intended berthing time. This was required by the Ministerial Regulation by the Minister of Transportation No 15 Year 2016 on State Revenues Other Than Tax. Eventually, the VASA officers verify those documents, ship specification, cargo type, the preferred time and the availability of berthing location as well as additional services needed by the vessel.

Afterwards, the PTE, PMS, ship agent and all related stakeholders undertake a pre-operational meeting (initial briefing) to create an agreement on a ship shifting plan. The results of the meeting will be adjusted into an invoice based on the services required. The next step will be proceeded after the invoice has been paid.

The next phase is scheduling the resources and equipment, including vessels, trucks and cranes. The PTE allocates a Pilot, while the PMS appoints tug(s) including the crew and a pilot boat through the VASA. The schedule of a ship, in general, depends on the availability of the space on the wharf and the number of ships handled by a Pilot.

Prior to the assisting of the ship, there will be a technical meeting. All technical and detailed plans, including equipment involved, will be discussed. This meeting will be conducted together with the meeting of the loading/unloading plan. The operation with regards the timing will also be discussed to aim for the efficient, but safest pilotage services.

The communication amongst the Pilot and crew of tug as well as the Pilot Station officer would be either on the Channel 12 or 14 via the Very High Frequency (VHF) radio.

[7] The Decree of Minister of Transportation No KP.603 Year 2012 on Permit for PT Pelabuhan Indonesia to Provide Pilotage Service.

I.7.2. Pilot

The PTE had 7 Pilots to support the pilotage activities. They ran the work in shift groups. One group has a 12-hour work time. There were no differences between a Pilot who assists a ship within the basin or in the outer basin/channel.

In the operational aspect, the Pilot is working for the PTE. However, the supervision, education, development and responsibility of the Pilots fall under the Directorate General of Sea Transportation (DGST), Ministry of Transportation. Based on this system, the Pilots are required to take a refreshment program every three years. The PTE provides supporting matters, such as systems and devices (for instance the Portable Pilot Unit/PPU) which can enhance the quality and safety of the pilotage service.

The Pilot who assisted the *Soul Of Luck* had been working as the Pilot in Semarang waters for nearly 1 year. Previously, the Pilot worked in Kotabaru, Province of South Kalimantan on the same occupation and then moved to Semarang, Province of Central Java. At the first time he joined in the PTE as a Pilot, he engaged in a familiarisation program. The Pilot who held certificates of Pilot Class II[8] and certificate of competency of Deck Officer Class III was the most senior Pilot amongst all Pilots in the PTE. The certificate of the Pilot was applicable to assist the ship which the length less than 200 m. The Pilot had no issues in communication in English either with domestic or foreign ship crew.

I.7.2.1. Standard Operational Procedure of Berthing

The main regulation of standard operational procedure regarding services of tug boat and crew in Indonesia is the Ministerial Regulation by the Minister of Transportation No 57 Year 2015 on Pilotage and Towing which emphasises all of those duties related to the assisted ship. Accordingly, the Pilot had jobs as follows.

a. *coordinate with the ships surrounding, Pilot Station /VTS;*
b. *report to the Pilot Station officer about obstruction in the channel and improper condition of navigational equipment;*
c. *pay attention to possibility of marine pollution from a ship;*
d. *report about the risks of chain and anchor in the channel;*
e. *wear the uniform, emblem and safety gear;*
f. *help the Master to comply with local regulations;*
g. *report to the Pilot Station officer if the Master takes a decision out of the Pilot's suggestion or hampers the Pilot's works; and*
h. *report to the Pilot Station officer if the Master is unable to show a valid ship insurance policy.*

Underneath the minister regulation, the Ministerial Regulation by the Harbour Master of Tanjung Emas No KP.105/06/07/KSOP.Tg.Emas-16 on Procedures of Pilotage dated 20 December 2016 has detailed the regulation into a procedure by adding some local contents. Based on it (deemed as the reference of standard operational procedure), the Pilot had duties to:

a. *ensure the safety of ship movement, prevent and overcome a marine pollution as well as enforce the law on behalf of local Harbour Master;*
b. *assist the Master;*
c. *provide information needed by the Master;*

[8] Other than Pilot Class II, there are Class I and High Seas Class for Pilot level.

d. *fulfil the Master's request to take over the control of ship in outbound or inbound;*
e. *know the depth of pilotage waters;*
f. *ensure the completeness of required documents issued by the local Harbour Master; and*
g. *report to the Pilot Station officer in regards to the hazards, changes of channel, ships or port facilities within pilotage waters.*

Later, the local Harbour Master regulation was converted into an operational procedure made by the PTE. The PTE issued the operational procedure in regards to the preparation and ship berthing service in Indonesian language. This procedure in the internal company named as "*work instruction*", "*quality pocedure*", "*system and procedure*" and "*procedure*".

There were some procedures related to berthing a ship. The Procedure dated 1 August 2018 No P-FLEET-01 on *Prosedur Pengoperasian Kapal Pandu dan Tunda* (Procedure of operation of Pilot Boat and Tug Boat) was for crew of tug boat and pilot boat as well as Pilots. Another procedure dated 23 May 2017 No P – MT – OPS – 21 on *Persiapan dan Pelayanan Penyandaran Kapal* (Quality Procedure of Preparation and Delivering Services of Berthing of Ship) was for the other employees work in loading/unloading and un/berthing of vessel.

The unofficial translation of summary of procedure of P-FLEET-01 is as follows.

5.1.1. Before the Operation of Tug Boat

1. *The master of tug boat should ensure the contract documents with the customer, understand the risks and health-and-safety, acknowledge the status of assisted vessel regarding the compliance to the national legislation, ensure the tug boat is in a good order and well maintained and understand the communication system with the customer, including the reporting system of results of works.*
2. *To prepare the VASA application on the mobile/tablet and ensure the battery is always sufficient.*
3. *To undertake a tool box meeting at the beginning of shift work.*

5.1.2. Whilst the Operation of Tug Boat

1. *The crew of assisted vessel receives the order from Pilot Station via VHF radio channel 12 or 14.*
2. *The crew of tug boat prepare the operation, such as announcement using public addressor, preparing the engines and navigation equipment as well as to don personal protective equipment (PPE).*
3. *To ensure the tug boat is free from any obstacles.*
4. *To coorndiate with Pilot or Master of assisted vessel.*
5. *To receive the mooring line from the assisted vessel and maintain the speed less than 5 knots.*
6. *To coordinate with Pilot or Master of assisted vessel if there is an unsafe condition.*
7. *To report accident to the fleet department.*
8. *The crew of tug boat to make a report to the Pilot Station after the service is completed.*
9. *The crew of tug boat to fill in the Daily Operational Report and Deck and Engine Log Books.*
10. *To come back to the tug boat jetty.*
11. *To communicate the engine crew when the service is completed.*

In terms of the tool box meeting, the meeting then documented into a report. Based on a few reports of tool box meeting, the meeting should discuss several matters, the examples are as follows.

a. The use of fire extinguisher.
b. To work safely, to put the safety and security as the priority.
c. To maintain the equipment of the vessel.
d. Planning of weekly works.
e. Demonstration of using the PPE.
f. Dissemination of results of monthly meeting.

The local Harbour Master regulation instructed all Pilots to berth the vessel in bow out (heading north) position. As a consequence, all inbound vessels should be turned in the basin before berthing. In a difficult situation, a vessel is allowed to be berthed in the opposite position, subject to the permit from the local Harbour Master.

Based on the explanation from the Pilot, generally, there were two types of berthing practised by Pilots in Tanjung Emas area, namely direct and indirect as shown in the Figure I-21. The direct method meant turning the assisted ship in turning to port near the targeted port. This option was commonly practised because it allowed the Pilots to finish the berthing works in a shorter time than in another way. The Investigation Team found that most of the witness who worked in the Container Port territory admitted that most Pilots applied this method.

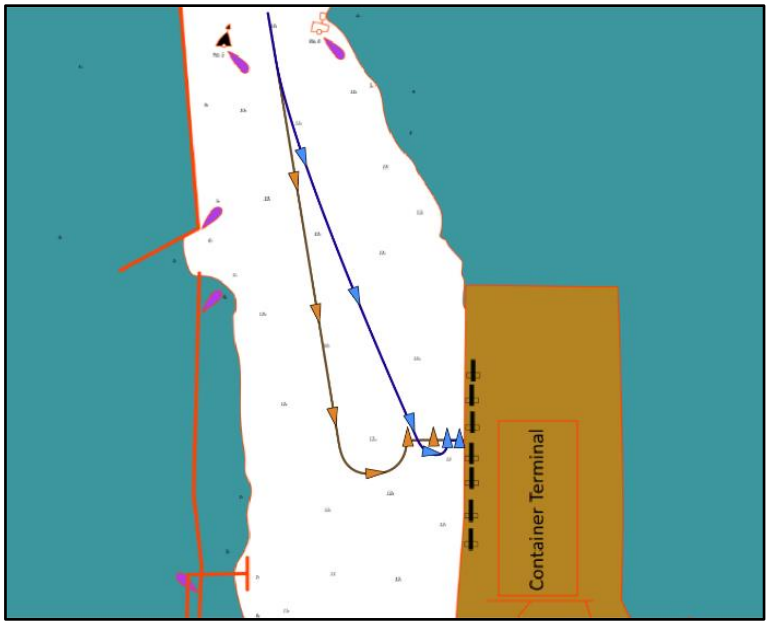

Figure I-21: The direct (blue) and indirect (brown) methods

Otherwise, the indirect method was by turning the assisted ship to port in the middle of the basin of the Container Port. This method was less favoured by the Pilots as it took longer time to be completed. Based on the Pilots' experience, the indirect method was only applied for cruise ships which their sizes are larger than *Soul Of Luck*. When this method was applied, most ships surrounding the basin should be cleared to enable a cruise ship manoeuvre safely.

Prior to the incident, the Pilot intended to berth the *Soul Of Luck* in the direct method. The Pilot would order to turn the *Soul Of Luck* to port when the ship was approximately close to the gantry No 03.

I.7.3. Tug Boat and Crew

I.7.3.1. Tug Boat

The Ministerial Regulation by the Minister of Transportation No 57 Year 2015 on Pilotage and Towing defined the minimum standard of tug boats engaged in towing operation. The number of tugs and the total power depend on the length of the serviced-ship size.

At the time of accident, there were 3 tug boats owned and operated by the PMS. The two tug boats engaged in berthing of the *Soul Of Luck* were *Jayanegara 201* (2 × 1,000 HP) and *Jayanegara 304* (2 × 1,500 HP). Other than those, tug boat *Anoman IV* (2×1,000HP) was ready to be deployed from its berthing place when called upon (see Figure I-2).

Table I-1: The minimum standards of tug boats

Length of ship	Number of tug boat(s)	Minimum tug boat(s)'s power (in total)	Minimum bollard pull power (in total)
70 – 150 m	1	2,000 HP[9]	24 tons
150 – 250 m	2	6,000 HP	65 tons
> 250 m	3	11,000 HP	125 tons

In regards to the number of tug boats used in a towing operation, ship agent can make a special request. Upon the submission and making a request into the VASA system, the ship agent could select the number of desired tug boats.

I.7.3.2. Standard Operational Procedure of Towing

The PMS was responsible for the operation of the tug boat and pilot boat. The document which was the revision No 2 issued in June 2019 regulated how the involved stakeholders should act. For example, the crew of the tug boat and pilot boat, including the Masters on both boats.

The aspects demanded by the procedure of tug boat and pilot boat operation were as follows.

a. *preparation works prior to launch a tug boat to assist a ship;*
b. *wearing personal protective equipment;*
c. *ensuring safety surrounding the tug boats;*
d. *the maximum speed of making fast the tug line (5 knots);*
e. *an accident or near miss report (if any);*
f. *a daily operation log; and*
g. *report to the Operation Department.*

The procedure required all accidents (incidents) and potential risks to be reported and documented. To enable this, a template of the minutes of the event (based on the article No 5.1.2.7 in the PMS' SOP) had been provided to record the incident of *Soul Of Luck*.

[9] Metric horsepower (approximately 735.5 W).

I.7.4. Pre-Berthing Briefing

The briefing amongst the Pilot, crew members of tug boats and crew members of pilot boats prior to the arrival of a ship is extremely important. The briefing would discuss the detail plan of how the berthing of a ship.

In the practical level, the meeting was called the Toolbox Meeting (refer to the term in the procedure manual). It was usually undertaken amongst the tug boats crew to discuss safety matters in details. For example, the use of fire extinguishers and personal protective equipment, cautiousness at work, maintenance of vessel equipment, weekly plan of work and dissemination of results of monthly meeting. However, the investigation team could not corroborate the documentation of pre-berthing meeting which discussed the details of un/berthing activities.

I.8. WEATHER INFORMATION

The Investigation Team acquired the weather information from the Headquarters of Meteorological, Climatological, and Geophysical Agency (BMKG). The information comprised of the wind, wave and current. There was neither rain nor fog at the accident time. The visibility was around 9 km.

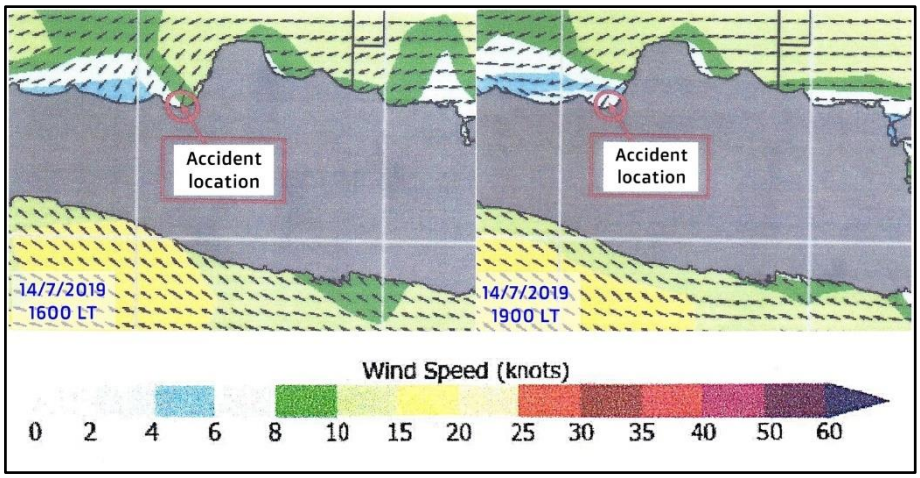

Figure I-22: The wind direction on 14 July 2019

From the weather information, it was known that the wind blew towards the Tanjung Emas Port with the strength of between 4-12 knots within period of 16.00–19.00 LT of the incident day. The wind direction was north-east, whereas the motion of the *Soul Of Luck* right before the allision was towards the east.

However, the precise wave condition in the basin was not known because the Tanjung Emas Port basin was protected by its break water.

I.9. MENTAL MODELS

A mental model is described as "*the mechanisms whereby humans are able to generate descriptions of system purpose and form, explanations of system functioning and observed*

system states, and predictions of future system states" (Rouse & Morris, 1986). In a simple definition, it is a perception of someone towards the objects, activities or conditions based on the knowledge, observation and experience (Langan-Fox et al., 2004). This term was first used in 1943 by Kenneth Craik. Someone's assumption is built based on the knowledge and

experience of all five senses. Therefore, the way of thinking about an object or situation of each person is most likely different each other. Further, a mental model of the two people would be different due to the differences in culture.

The mental model defines how someone carries out a deed based on their knowledge and experience (Gentner, 2014). The deed, as derived from the mental model, would be different for each individual. Further, the decision taken by someone would be based on what is in the mind, particularly when there was no guidance or when the guide has been ignored in particular situations.

Mental model also covers how someone expects other people to react (Castellan et al., 2013). This behaviour becomes critical when the expectation or action involves more people, e.g. in a team. In terms of the seamanship, this cooperation is called the Bridge Resource Management (BRM). To eliminate an incorrect perception, a briefing and debriefing are prominent need to ensure that the plan is running on the track. Through the briefing sessions, the expectation and information would be conveyed by the members and later become a shared mental model (Imset & ØvergÁrd, 2017) otherwise known as consensus. This has been pointed out by a study which found that human interaction is a dominant factor in shaping a unified understanding (Lynam et al., 2012). Without the team mental model (TMM), there will be inconsistent perspectives about how to solve a problem.

The highest advantage of the briefing is eliminating incorrect mental models in preventing an accident. An accident might be a result of a dyad partnership coincidentally with similar improper mental models (Badke-Schaub et al., 2007). The TMM amongst a team comprised of more people, is likely to allow the member to make a correction of a wrong-doing act. Moreover, when all members have the same familiar tasks and basic knowledge, it is supposed to enable an improvement of discipline of works or appropriate responses.

In a research, the incorrect mental models can occur in all level of intellects, even the well-educated people (Fischhoff et al., 1993). In more complex situations, the mental models would deterioriate the situation when it is followed by the inaccurate assessment.

I.10. PROCEDURES AND QUALITY OF WORKS

A standard operating procedure (SOP) is a set of written instructions on how to perform activities in a standard method (Presentationeze, 2014). The advantage of an SOP is the consistent work with minimum error, so that the output would be a homogeneous result. Another benefit of the SOP is to allow the tasks and procedures to be reviewed on another day as tasks and responses are documented. Cole (1999) stated, "*document what you do, do what you document, and verify that you are doing it*". It clearly indicates that a written action is an important part of the International Organization for Standardization (ISO) work.

Another important function of the SOP is implementing a change in a system. When employees are asked to carry out their duties in a different way, a comparison between before and after the adjustment method would be shown in a measurable way (De Treville et al., 2005). Hence, the management level would be able to decide whether the improvement is feasible enough to be adopted or to revert the system back to the previous procedures.

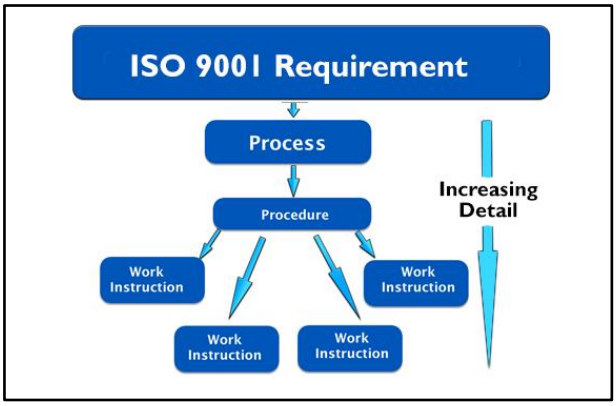

Figure I-23: The illustration of relation between ISO 9000 series and standard procedures

The characters of the SOP –in general– are clear, concise, instructional, logical and measurable. Clear means the procedure is able to guide a worker to do an activity step by step. All steps should be done by unified interpretations. When workers are doing with different results and unacceptable types of results, the SOP shows unclear instructions. The concise means the sentences written in the document should be as little as possible, but does not change the meaning of the sentences. Accordingly, worthless phrases are undesirable in the SOP. The most active verbs in the SOP should be an instruction, instead of describing or reporting. Indeed, the instruction has to be within a logical thinking to ensure the documents are applicable. Similarly, the activities in the SOP should be measurable for analytical purposes.

The ISO is a world class benchmark of quality and international standard. The ISO 9000 series (ISO 9001, ISO 9002, and ISO 9003) is the most widely adopted by many organisations, including in the marine industry (Thompson et al., 2008). One of purposes is to develop a standard for works within the organisation to enhance the productivity (Tamayo-Torres et al., 2014) and performance (Gotzamani & Tsiotras, 2001).

However, the quality of management still has a flaw which contributes in human factor. A study found that employees felt that inadequate procedure is one substantial issue, beside the training and relationships (Daud et al., 2012). The most frequent element which fails to bring the company better service is the SOP itself. Inadequate procedure might be a result of improper aim of the SOP, such as to gain an ISO certificate, instead of ensuring that the processes are on track. Sampaio, Saraiva and Monteiro (2012) and Francisco (2012) suggested that many companies would have increased benefits if influenced by the ISO certification. Also, when the SOPs as the requirement to acquire the ISO certificate are understandable by the creator only –commonly the Human Resource Development Division– the users or doers of the SOPs find difficulties to follow the instructions.

II. ANALYSIS

The analysis carried out in this report is based on the evidence taken by the Investigation Team from the witness interview, *Soul Of Luck*'s Simplified Voyage Data Recorder (SVDR), Semarang VTS Station, ship's documents as well as pilotage related documents. Some government regulations were also elaborated in this chapter. Apart from the direct causal factors, this chapter will also discuss about the importance of the other safety issues which are considered as substantial matters. The KNKT's analysis is solely made to enhance the safety of marine transport by issuing safety recommendations referring to the analysis chapter.

Scrutinising the causes of the accident, the weather issues and the incident of broken of tug line did not pose as as the root causes. The influence of weather was not confirmed by the alteration of *Soul Of Luck*'s heading when she was in the channel, either whilst her engine power was active or inactive. The tug line incident occurred after the allision occurred which made it had no correlation as the factor in this accident.

II.1. ENGINE CONTROL MALFUNCTION

II.1.1. The Causal Factor of Engine Control Malfunction

The engine crew acknowledged that the engine could not run astern whilst the *Soul Of Luck* was approaching the shore. The crew manually started the engine multiple times which brought the same result. Therefore, the ship continuously moved forward. The situation was unpredicted by all individuals onboard. The engine crew, at the time, did not know what happened after the *Soul Of Luck* turned to the port towards the shore.

The witness interview also confirmed that the valve was broken in the pneumatic system. This part was responsible to deliver the air to control the engine. The failure of this part meant the engine could not be controlledas intended by the engine crew.

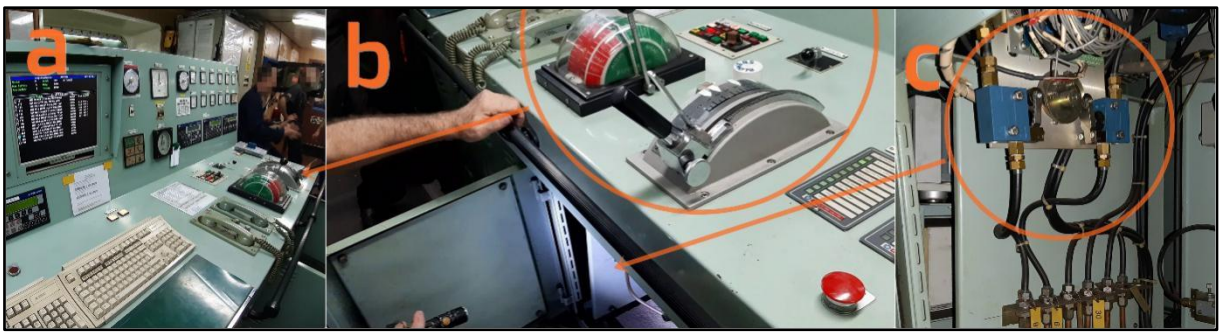

Figure II-1: The panel controls in the engine room (a); the engine control (b); the pneumatic valves

The investigation team already inspected the broken part and found that the valve had a broken element, specifically the brass and rubber ring seals. There were some scratches on the surface of them. First possible cause is that there was some dirt contained in the pneumatic air system which was pushed by high pressure air for a long time. Another possible cause is an improper external pressure in a wrong method whilst opening the ring seals. Nonetheless, the absence of the pneumatic valve maintenance has disabled the effort to figure out the issue further.

The defects on those parts further created an air pressure leak which caused the engine system to malfunction. This is why the engine crew failed to activate the main engine in astern

mode, despite some attempts had been made. None of the trial made a positive result. Taking into account the function of the rings, the valve system should be airtight at a certain bar of the working pressure.

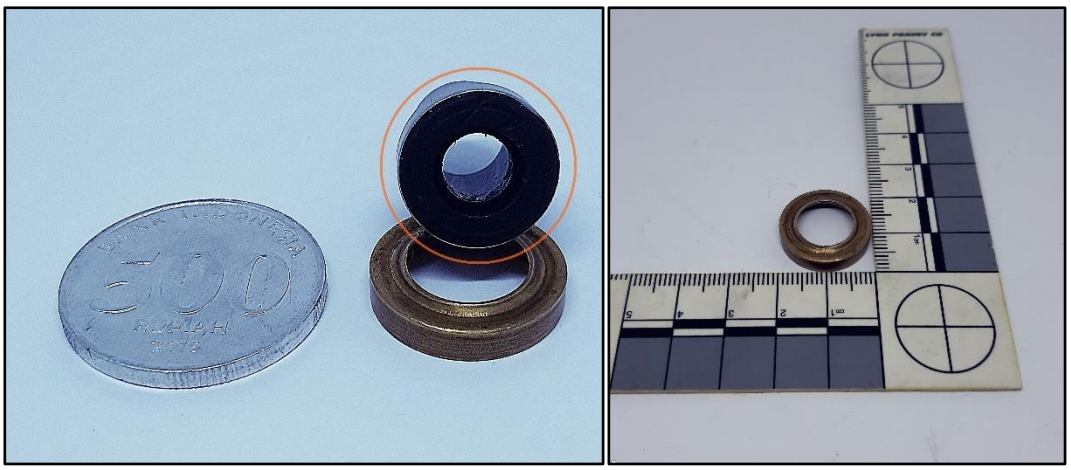

Figure II-2: The broken rubber ring in the pneumatic valve (orange circle, left) and the broken brass ring (right)

II.1.2. Maintenance of Pneumatic

The investigation team could not retrieve any records related to the broken parts. The replacement of the pneumatic valve was unknown and it was predicted occurred before all engine crew went onboard the *Soul Of Luck*. Thus, the performance of the valve was not recorded in details as the main engine performance.

Figure II-3: The close-up view of broken rubber and brass parts

In addition, there was no specific requirement about maintenance of the pneumatic valve. Refer to the engine crew, the engine procedure did not mention about this specific part.

Based on the scope of class survey described on NK's Rules for The Survey and Construction of Steel Ships — Part D Machinery Installations (Nippon Kaiji Kyokai, 2020), the pneumatic system was not involved in any types survey of engine performance. Neither annual, intermediate nor special survey listed the detail performance of the pneumatic system in the surveyor works. Likewise, the The International Association of Classification Societies (IACS)

also has issued a guidance of engine survey on Hull, Structure, Equipment and Machinery Surveys of Mobile Offshore Drilling Units. None of the survey types include the spcific item of pneumatic system in the list of work. Therefore, the classification surveyors' works were limited to the engine performance in a whole unit, not in a particular to assess the pneumatic valve condition.

The investigation team has had obtained an explanation from the engine maker company regarding the recommended practice of maintenance of the pneumatic valve. Renewing non-metallic parts and O-rings in the various valves every second year is strongly suggested without waiting until undesired symptoms appear. The engine maker also has recommended that the functioning of the system is checked regularly, by testing under controllable conditions, and that the components are overhauled preferably every two years and at least every five years.

Checking of the functioning can be carried out while the engine is not running, based upon the supply of starting air only. If the engine control mode is switched to engine-side control position, the influence of the governor, the engine room console, and the bridge control is eliminated. In this engine-side control mode, the starting, stopping and reversing will solely depend on the functioning of the components mounted on the engine itself. Subsequently, the control mode is to be switched to the engine room console and, finally, to the bridge control, where the checks should be repeated and confirmed at each step. If such checks are carried out routinely, failing functions will quickly be detected, and faulty components more easily located.

There is a risk that some of the valves may suffer from a damage, such as corrosion attack or dirty air due to some reasons. The problem is that such defects are seldom discovered until the occurrence of a failure. For this reason, and in order to avoid delays, the engine maker company recommended that thevessel should carry a spare component, complete, for each of the identical valve types.

On a ship, the main engine —as well as all components related to the main engine performance— is a substantial matter. Therefore, the small parts in which the engine performance is depending on them are categorised as critical items that should be treated as priority in the Planned Maintenance System by the internal (ship crew). The company should encourage the ship crew to ensure the plan works effectively, particularly for the pneumatic system, instead of relying on the state and class survey.

Amongst the options of the maintenance method, the reactive maintenance should be kept away for the critical parts. In the other words, the maintenance of those parts would be useless if it is carried out after a failure happens. Not to mention, when a reactive maintenance method was selected for critical matters, the costs emerge after a failure happens needs to be consider. At this stage, there is a need to change the maintenance method for the broken parts from reactive to another method which is more advance, other than reactive.

Because the broken parts are critical elements, the Planned Maintenance System should include some specific circumstances for a review and revision. The failure record which did not show any symptoms before should be deemed as a serious situation which could occur suddenly, particularly in critical situation. Another matter is the record of the substantial parts which engine performance closely related to them. As there was incomplete record system, the need to escalate the maintenance from reactive to preventive —or a better one— is a must.

II.2. DEALING WITH DIFFICULT SITUATION

II.2.1. Solving the Engine Control Issue

When the engine telegraph on the bridge was positioned to astern, the engine crew responded the engine telegraph in the engine control room to astern and then positioned the engine handle to astern. However, the *Soul Of Luck*'s engine did not respond to astern. Dealing with this, the engine crew took several attempts to address the issue.

The engine crew asked the permission to the Master to test the engine. Although the engine could run for ahead several times, the engine still did not work for astern. This was witnessed by some crew of tug boats that they saw the wakes emerged by *Soul Of Luck*'s propellers.

Some actions took by the ship crew above-mentioned were appropriate subject to the checklist of engine failure onboard the ship. The Chief Engineer informed the Master about the occuring situation. The Chief Engineer also made some attempts to figure out the issue on the main engine, despite it was unsuccessful. At the same time, the Master also told about it to the Pilot and then the critical situation was broadcasted to the surrounding ships.

However, the checklist of engine control failure did not exist at the time. Therefore, the actions took by the engine crew was based on the available one, which was the checklist of engine failure. Even though this type of failure rarely occurs, the impact on the surrounding — particularly when the vessel was in a limited waters and/or close to the other objects— should be covered by the SMS Manual. Further, the crew of the *Soul Of Luck* in both deck and engine division would be more familiar about how to deal with the similar situation.

In addition, since the location of the ship was too close to the port, the other actions could not be taken. There was no time for them to disambleand replace suspected parts or further efforts. The time was only available for them to take any shortest and most effective actions to reduce the impact of collision. A reference from a Notice to Shipping (Panama Canal 2020) on Navigation Bridge Features Required of Transiting Vessels — Main Propulsion Systems suggested to switch the control to the engine side should the remote control at the bridge and ECR had no effect. However, the effort to control the engine from the local position had no place to be done in that limited time. In addition, it took a special knowledge about the main engine of *Soul Of Luck*. Also, the knowledge of the manual control of the main engine was insufficient if there was no training in switching from the business as usual into fully manual control.

II.2.2. Altering the Heading

The reaction to deal with the engine control failure was also taken by the Pilot. By that time, there was only one tug boat fastened to the *Soul Of Luck*, which was *Jayanegara 201*. Realising the situation, the Pilot asked the *Jayanegara 304* to push the fore port side of *Soul Of Luck*. Considering the distance between the *Soul Of Luck* and *Kanway Galaxy*, which was only around 0.1 NM, and the engine of the *Soul Of Luck* was still having an issue, the action was the most appropriate to undertake at the moment.

When the *Jayanegara 304* was asked to push the *Soul Of Luck*, the Master of the *Jayanegara 304* informed the Pilot that the *Jayanegara 304* was at her maximum power at 1,000 rpm. At this situation, the 1,000-rpm meant that the *Jayanegara 304* engaged her power around 62% of her maximum power.

However, the engine of the *Jayanegara 304* could not reach her maximum power due to several reasons. The speed of the *Soul Of Luck* whilst approaching the wharf as well as the

contact angle between the *Jayanegara 304* and the *Soul of Luck* made the *Jayanegara 304* had to share her power to follow the movement of the Soul Of Luck and to push *Soul Of Luck*. Based on the assessment of the Master of the *Jayanegara 304*, the engine speed of the *Jayanegara 304* could not be increased until her maximum power because of the vibration and impact risks on the engine. This was expressed several times by him to the Pilot that the engine speed of *Jayanegara 304* had already reached 1,000 rpm.

In addition, the other risks were waiting in that particular situation. Should *Soul Of Luck*was successfully pushed by the *Jayanegara 304*, she might proceed the movement towards the other vessels. The *Ceria 8* would be the first which hit by *Soul Of Luck*. This could make *Ceria 8* suffered. Another possible was the multiple allision. After the *Ceria 8 was* hit by the *Soul Of Luck*, the *Ceria 8* might be continuously pushed towards a bigger risk. There was the *Heng Xin*, the fuel cargo vessel.

II.2.3. The Use of Bow Thruster

In this accident, there was no action to use the bow thruster. Even though the Master of *Soul Of Luck* told the Pilot about the condition of bow thruster was ready in operation, the thruster was not used to prevent the allision due to some reasons.

First, the use of tug boats. This was based on the common practice that the tug boats always assist the vessel in un/berthing operation. When the tug boats are towing the vessel, the use of bow thruster would be impractical or even gives a dangerous impact on both tug boat and the vessel itself.

Second, the speed of *Soul Of Luck* was relatively unacceptable in using the bow thruster. The speed of *Soul Of Luck* was above 3 knots until she hit the gantry crane. Even though the bow thruster was used prior to the allision, this would give no effect on the heading. In the other words, the only chance to use the bow thruster effectively was only after the allision.

Should her bow thruster be in operation after she collided the gantry crane, the benefit might be on the other vessels, instead on the gantry. *Ceria 8* and *Heng Xin*, perhaps, would be free from contact with the *Soul Of Luck*.

Third, the timing between the engine control known malfunction in the first place and the allision was insufficient for the ship crew to prepare the thruster. At the time, the engine crew were busy in understanding the factor of the engine issue. At the same time, the deck crew also were focusing on handling the vessel.

II.2.4. The Use of Anchor

In an emergency situation, the anchor was expected as a better option in minimising the loss. Although the anchor could not stop the vessel completely, keep in mind the main function of the anchor, the speed of the *Soul Of Luck* was believed to slow prior to the collision, only if the anchor worked properly. The ATSB (2007) has emphasised the advantage uf using the anchor(s) to control the speed and direction, particularly when there is no tug boat to assist.

To allow the use of anchor in the critical situation, the anchor should be ready for letting go, at least whilst she was in the channel on departure. As part of contingency planning, any securing arrangement as well as the crew at the forecastle should be kept ready for a command in case of emergency (INTERTANKO, 2019). Along the conversation amongst the screw, there was no command from the Master of the *Soul Of Luck* to prepare the anchor.

However, referring to the initial unspoken plan in which the *Soul Of Luck* was in the direct method, the plan made the anchoring was unworkable. The direct method made all of tug boats

to work on the port side of *Soul Of Luck* which in turn made a prohibition in using the port anchor. The Marine Accident Investigation Branch (2001) has stressed the clearance surrounding the anchor should the anchor would be released.

On the other hand, the direct method also automatically made the starboard anchor to be avoided as the vessel would berth alongside directly by her starboard side. Should the *Soul Of Luck* was in the indirect method, she would have a chance to drop her starboard anchor, subject to the readiness of the crew and her speed. This plan could reduce the speed whilst letting let her to ground towards the shallow waters in southern area of the Tanjung Emas Port.

Another factor made the anchor could not be dropped was the speed. The INTERTANKO also reminded the seafarers in the Anchoring Guidelines to maintain the safe speed prior to anchoring. The recommended speed to ensure the effectiveness of anchoring is less than one knot (Skuld, 2019; ShipsBusiness, 1999, Jassal, 2016 and Pierce & Pierce, 2017).

Having look back to the speed of *Soul Of Luck*, the speed less than one knot was reached after she was held by *Ceria 8* and *Heng Xin*. Nonetheless, dropping anchor at that speed was fruitless because the *Soul Of Luck* was heading away from Tanjung Emas Port. In addition, the tug boats have moved to the starboard side of *Soul Of Luck* after the allision and collision. Therefore, dropping starboard anchor was extremely dangerous for those tugs. Should *Soul Of Luck* dropped off her starboard anchor, this would also create another obstacle for the *Jayanegara 201* to re-fasten the tug line.

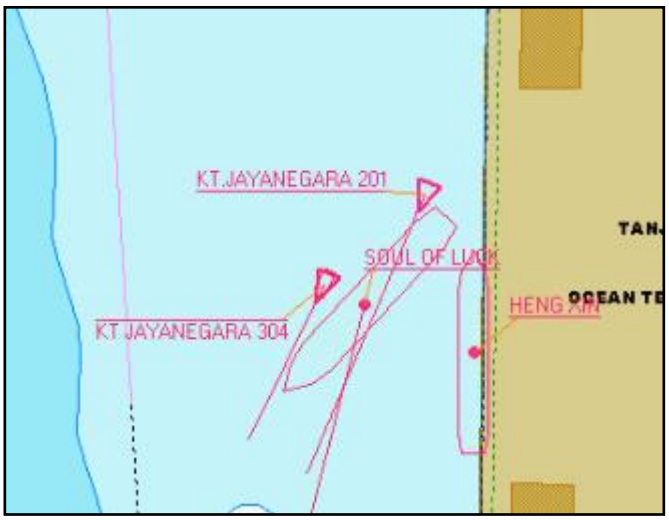

Figure II-4: The position of Jayanegara 201 and Jayanegara 304 on the starboard side of Soul Of Luck after the allision and collision

The use of anchor had been proven ineffective when the vessel was moving not in a very low speed. In 2018, a bulk carrier dropped off her anchor in Balikpapan Bay. The vessel's speed was steady, although the anchor chain was tight. Instead, the anchor made a long scar and destroyed a subsea pipe installation on the sea bed (Komite Nasional Keselamatan Transportasi, 2019). The accident clearly indicated that anchor needs certain speed and space to slow down a moving vessel.

In the Soul Of Luck accident, the space and time did not allow the anchor to be used. Refer to the time gap between the engine control failure firstly known and the allision which was only around four minutes and the distance to the wharf was too close. Similarly, the speed of vessel, also did not allow the anchor to work effectively.

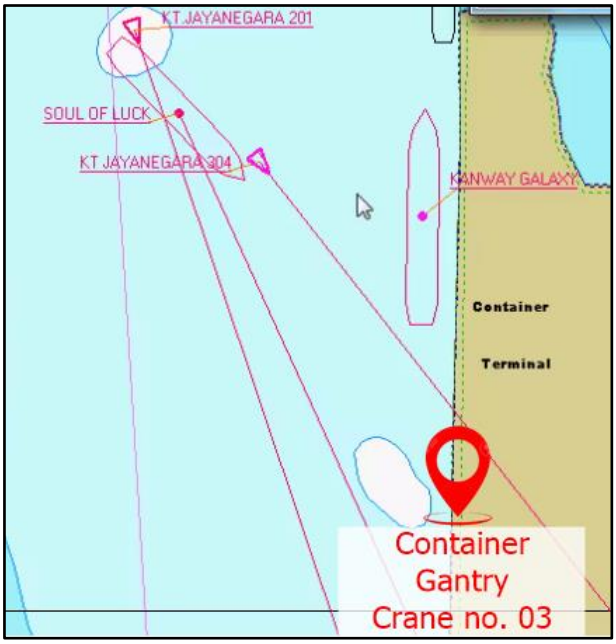

Figure II-5: The situation when the engine control malfunction was known in the first place

II.3. LOSS OF CONTROL

There were some possible causes of the change of heading of the *Soul Of Luck*. The change then made the *Soul Of Luck* became closer to the port. From the source of the factors, they can be grouped into two types, namely internal and external. Internal involves the command and action taken by ship crew as well as the technical matters onboard the ship. External means any disturbance which made the heading of *Soul Of Luck* changed.

The VDR data confirmed that the change of *Soul Of Luck*'s heading was not triggered by a steering order from neither the Pilot nor the Master. None of them asked the helmsman to change the *Soul Of Luck* to the port. Similarly, there was no engine issue which influenced the engine or rudder. Although the *Soul Of Luck*'s engine did not work for astern, it did not influence the heading change.

The *Soul of Luck* was a common type of container ship which had single propeller and single rudder. This ship type, when was moving ahead, her heading was tending to port. When the speed was below the navigable speed, she more tended to port because the rudder is ineffective.

The reduction of her speed initially was intentionally planned. Whilst she was passing the pair of buoys No 3 and 4, the engine was positioned to stop engine. Along the time, her speed was decreasing until it was below the navigable speed. At this circumstance, the only option to re-take control of the ship's movement was either using her own power or the two tugs. However, none of them was available.

At the critical moment, the engine of *Soul Of Luck* was in trouble. At the same time, both tugs were not ready yet. The combination of those factors made *Soul Of Luck* had no option, save trying her own engine several times.

The weather factor, in terms of wave and wind, did not show as the main factors in the accident. The movement data of *Soul Of Luck* as well as the other ships on the channel justified the influence of weather to the ships in the area.

Another possible factor of the change of *Soul Of Luck*'s heading was the tug's force which attached on the port side of the ship, namely, the *Jayanegara 201*.The changing of the *Soul Of Luck*'s heading began when the *Jayanegara 201*was moving alongside the *Soul Of Luck*. At that time, the *Jayanegara 201*'s tug line had been fastened on the *Soul Of Luck*'s aft port bollard.

Whilst waiting for the *Jayanegara 304* to complete its tug line, the Master of *Jayanegara 201* checked his mobile phone for a few minutes. Despite it was not long, considering that the *Soul Of Luck*'s engine was in stop position, it might lead to unintentional drive from the tug onto the *Soul Of Luck*.

The change of heading was part of the plan in the direct method. Almost all inbound vessels were turned in Semarang Port basin, particularly close to their respective ports. The response of Pilot and Master of *Jayanegara 201* affirmed this practice. They were not panic when the change of heading of the *Soul Of Luck* began in place. The Pilot was aware about it and asked the *Jayanegara 304* to push the bow of the *Soul Of Luck*. Similarly, the master of *Jayanegara 201* also was aware the situation and this made him to slightly adjust the heading of *Jayanegara 201*.

However, the change of heading occurred coincidently with the failure of the engine control. This circumstance, further, made the *Soul Of Luck*'s direction was hard to control. By this stage, the contingency plan was needed as the backup when the common practice did not show up due to a cricital issue.

II.4. RISKS AND HAZARDS IN SEMARANG PORT WATERS

In consideration of the surroundings of Tanjung Emas Port, there were some high risks which should be taken into account by all stakeholders. The risks were not only related to the allision between a vessel to the gantry, but they could come worse if the safety measures did not work at the same time.

At the southern of the Tanjung Emas Port, there is a port which often receives fuel cargo. *Heng Xin* was one good example. Fuel cargo was notoriously as one of the highest risks in the shiping industry. The fire or explosion might happen as a result of an allision with a fuel tanker.

Across the Tanjung Emas Port, there was a Liquid Natural Gas (LNG) port. This port was equipped with supply pipes and shore tanks. To bear in mind that the basin of Tanjung Emas Port has a limited width of less than 500 m, not including the navigable waters, this was the biggest risk in the area. The impact would not only to the LNG port only, but also be a calamity.

Despite the Pilot already reminded the Master of *Soul Of Luck* for not altering to the starboard where the LNG port was located, this safety measure could be improved. The speed control should be considered as the important consideration in towing a vessel either inbound or outbound. To enable this, there should be a research to define the safe speed for each type and size of vessel, with also taking in mind the other variables, such as current, wind, weather, traffic situation and power of tug boats.

Another risk control is to define a detail procedure of inbound vessel. The turning of a vessel next to port, instead of in the middle of the Semarang Port basin, was safe only if all manoeuvring gears were in a good order. Nonetheless, when the usual plan did not work properly, the situation needed to be counted on in a set of standard procedures.

II.5. REGULATIONS AND PROCEDURES

II.5.1. The Power of Tug Boats

Referring to the Article 38 of the Ministerial Regulations by the Minister of Transportation No. 57 Year of 2015 on Pilotage and Towing, a ship's length which falls between 150 and 250 m should be assisted by a minimum of two tugs. In addition, the regulation required that the minimum total power of all tugs should equal 6,000 HP. The requirement of minimum power and minimum number of tug boats are not substitutable.

Based on the request, the ship agent's asked two tug boats. Following up this request, the PTE deployed two tug boats with the biggest power available at the time, specifically *Jayanegara 201* and *Jayanegara 304*. Out of the request, another tug boat, *Anoman IV*, was on standby at the southern of the Tanjung Emas Port.

There were some reasons that only two tug boats used at the towing operation for *Soul Of Luck*. First, the VASA system did not have a feature to lock the number of tug boats. Therefore, the ship agent had an opportunity to choose any number of tug boats. Moreover, this circumstance did not appear as checked item in the periodical evaluation by the local Harbour Master.

Second, the use of more than two tug boats in the common practice (direct berthing) did not allow the third tug boat on the starboard side. Therefore, all tug boats should be on the port side. Despite the PTE could provide the third tug boat, it was impractical. As a result, only two tug boats assisted the *Soul Of Luck*, one at the fore, another at the aft.

Another issue was regarding the number of tug boats. The Ministerial Regulation by the Minister of Transportation No. 57 Year of 2015 did not rule the maximum number of tug boats related to the minimum power of tug boats. To illustrate, the article 38 has required that there should be tug boats with a total power of not less than 6,000 HP to assist *Soul Of Luck*. If the pilotage services provider only provides 10 tug boats with the power of 600 HP for each, this was correct based on that article. On the other hand, those 10 tug boats will not be able to assist the *Soul Of Luck* altogether due to the limitation of push tug areas.

Notwithstanding the Ministerial Regulation 57/2015 did not rule specifically about the maximum number of tug boats, there was an implicit rule regarding the power and maximum number of tug boats involved. In the other words, the condition of the assisted vessel (push tug locations) has asked clearly the maximum number of tug boats. At the same time, the regulation already obligates the minimum power of tug boats. Therefore, there should be maximum two tug boats with a total minimum power equals 6,000 HP. This requirement should be listed on the evaluation by the regulator.

Accordingly, the VASA system needs to be enhanced to close the freedom to select the number of tug boats. The towing service provider should decide this as the party which knows more about the condition of the available of the tug boats compared to the ship agent.

II.5.2. Standard Operation Procedures

The Standard Operation Procedure (SOP) on towing and pilotage has been covered in the Ministerial Regulation by the Minister of Transportation No 57 Year 2015 on Pilotage and Towing. However, that ministerial regulations need some extra works to improve the clarity of scope of works. In particular, the detail of oversight and responsible accounts were categorised as the urgent to address some issues in the safety aspect.

The point g of the Article 46 in that ministerial regulation has asked the local Harbour Master to set up system and procedure of services of pilotage and towing. The terms of “system” and “procedure” have been accepted as the “SOP” or “procedure”, instead of a set rule.

The SOPs set by those companies, as a consequence, have uniform names other than SOP. Most of the companies are reluctant to call their own procedures as the SOPs. The main reason was the confusing term of “procedure” in the article 46 of the Ministerial Regulations 57/2015. It was mistakenly understood that the regulator was the only party which has the authority to establish as well as to revise its own SOP. This phenomenon had been widely spread and accepted in many ports. Accordingly, this has become a barrier for the companies to set up the SOP in a proper manner.

The pilotage and towing services in Indonesia are delivered by profit companies, instead of by the regulator. At this point, those companies are the frontliner which should have their own SOPs. As they understand their own works, they have more comprehensive understanding about their details of works, particularly the safety matters, not the regulator. On the other hand, the real SOPs owned by the pilotage service provider showed only a few things as they believed that the local Harbour Master’s SOP was sufficient to cover what all Pilots had to do in details.

Some conventions require the frontliners to fully understand the safety regulations via their own SOPs. Further, the SOPs should amalgamate the mandatory and non-mandatory rules. The application of the procedures should be maintained so that the procedures can be embeded into the employees’ works. Without a clear-cut standard the regulations and safety norms would be effectively nullified. Otherwise, the noncoherent procedures has been one of notorious factors in most incidents and accidents (Horck, 2010).The practice of the local Harbour Master setting up the SOP was contrary to the function of the local Harbour Master as the regulator. This led to the existing SOP set by the local Harbour Master only ruled about basic matters related to the pilotage service, such as ship zones and mandatory pilotage area. It did not rule about how to deliver pilotage service in detailed and practical as required by the IMO Resolution A.960(23). At this stage, it was unclear whether the SOP of the local Harbour Master was a rule or a set of practical guidance (as the real SOP).

To prevent misunderstanding between procedure and regulation set by the regulator, there should be an evaluation regarding the term of “procedure”. As that term has emerged a confusing amongst the local regulator, central regulator andport service provider, the term of “procedure” should be replaced with something more appropriate. Having described the contents of the local Harbour Master’s procedures which more about regulation, the term in the Ministerial Regulations 57/2015 should be replaced into something which has the meaning of regulation, instead of procedure. The single interpretation, further, will enhance the shape of correct mental models about the There are many ways to create clear the procedures, not to mention the job descriptions. Most studies have shown similar ways to achieve the organisation’s goals. As the minimum, the organisation should have clearly written duties and assignments for those duties (Parker, 2007). For the sake of teamwork, the job description should be described in details and specific in their work procedures. The clear procedure will enable those institutions to work in harmony and at the same time to fill in the gap of service procedures in the pilotage service.

Finally, the clear job descriptions in all procedures enable the safety of service above the prestige. This feature is better than only ISO achievement which taken by many companies on order to establish a trust from their clients.

The shifting from ISO oriented to the Zero Accident Vision (ZAV) is currently ongoing in dozens of companies in Europe. This vision is based on the assumption that all accidents are

preventable. This vision is reflected in the revision of those companies' strategies. Further, the strategies will be derived into safety culture, i.e. evaluation and just culture.

II.5.3. Compliance Management

After the legal aspect of procedure has been reformed into the appropriate terms, another task is to establish a comprehensive guidance for the Local Harbour master in overseeing the SOPs of companies in its working authority. Job description has a substantial in defining scope of works in a procedure, particularly the accountable people in a work.

There was an issue regarding the oversight function as stipulated by the Article 47. The local Harbour Master was appointed to undertake this role which means that all SOPs —regardless the name in their companies— should be evaluated periodically by the local Harbour Master. When there were several issues in the SOP, the local Harbour Master should have asked the company to review and revise them. Also, the local Harbour Master should periodically evaluate the application of the standard and suggest some feedback to enhance the safety system.

The guidance of evaluation, refer to the Ministerial Regulation 57/2015 will be provided by the Director General of Sea Transportation, a head of division under the Minister of Transportation. Notwithstanding the article was clear, the guidance of evaluation was not available for public at the time of the accident.

The absence of the guidance later led to the deficient of oversight. This has emerged the top level of failure in the safety level (Galieriková, 2019). Based on the periodical evaluation, the scope of evaluation was limited to the physical performance of the fleet only, such as safety equipment and navigation devices. The evaluation did not touch the company SOP, i.e. performance target of pilot, tug crew and port workers.

In addition, there was no evaluation about the pilotage company's SOPs. The SOP had some signatures of company employees on the cover, but there was neither signature nor stamp of the regulator which could inform that the SOPs the contents of the SOP were fully checked. This flaw then left the lack of ensuring the safety system.

This flaw was confirmed by the non-existence of the oversight on the berthing and pilotage service practice. In regards to the facility, the local Harbour Master has the authority to evaluate all evidence to match the performance needed, for example the in/outbound vessel traffic data as well as communication phrases from the Semarang VTS, the implementation information exchange based on IMO Resolution A.960(23) as installed on the Pilot Portable Unit (PPU) and CCTV footage videos from many points in the port area and tug boats. Those facilities, undoubtedly, are the valuable sources to assess the company performance, including those involved human resources, not only the devices/tools such as the boats.

II.5.3.1. Berthing Method

The definite work of berthing needs to be defined clearly. It would be more effective if the bething term was defined from the pre-departure briefing or planning level until evaluation post-berthing. Nonetheless, the actual briefing called toolbox meeting showed that the realisation of it only covered very limited matters regarding the berthing activities. Instead of making a breakdown of towing activities with Pilot and crew of the other tugs, most of the topics discussed in the meeting were about the safety in the general aspects, such as the use and maintain of safety devices and personal protective equipment. Therefore, the shared mental model was hard to be achieved. This circumstance has indicated that the oversight of the briefing did not work properly.

Moreover, all procedures issued by neither local Harbour Master, PTE nor the PMS had clear description about how the berthing plan should be done. In the common practice, the briefing amongst the Pilot, crew members of tug boats and crew members of pilot boats usually was done informally via chat or telephone. Therefore, it was undocumented.

The direct method awhich has been practiced in long years in the Semarang waters undoubtedly has increased risks in the area, particularly in the vicinity of the gas port. There were two methods of berthing applied in the Tanjung Emas Port (see Figure I-21). Both methods were purely based on common practice, instead of the company procedure.

First, the direct method was used where the ship would be assisted to approach the shore. Right after the ship passed the last pair of buoys, the ship's heading was turned slightly to port side. When the ship's distance was around 0.1 NM, the ship was turned by the tugs. Finally, the ship was pushed towards the east to complete the berthing process which usually takes half an hour.

Second, the indirect method which is the same as the first method, but the curve radius for turning would be larger. Also, the turning point was relatively further than the first method which meant it would take longer to complete.

Based on the witness interview, the most common practice was the direct method. The majority of the witness' admitted that they have rarely seen the indirect method as it was only applied for very large or cruise ships only. Moreover, the first method allowed the Pilot and tugs' crew to carry out their work in an efficient manner.

The Pilot admitted that there were no standards of berthing the ship. As a consequence, each Pilot would have different ways of berthing. This acknowledgement was confirmed by the procedures which did not highlight the details of the berthing process. Although there were two procedures applied (the local Harbour Master regulation and the pilotage service company procedure), neither of them stated the berthing procedure in detail.

Other than reactive actions whilst a ship has an issue, the pilotage company should allow at least two scenarios in its berthing procedure. The first scenario is usually for a business as usual, such berthing. However, the worst-case scenario should also be embedded into the SOP of Pilot and tug Masters. Based on this requirement, the safest way to berth a ship is to enable a wide clearance between a piloted ship with the port. This will enable adequate time and distance just in case a piloted ship had an engine failure, tug line suddenly broken or any issue with a tug boat.

II.5.3.2. Safe Speed

A safe speed for each vessel type could be assessed by taking into account its minimum navigable speed and ability to stop in critical situation. Although the procedures of work for the crew of tug boats have mentioned about the threshold of speed (5 knots, regardless the ship type and weather situation), this was ineffective to implement in the real work. In the business as usual, the vessels come to Tanjung Emas Port vary in size and type.

As discussed previously, the speed held a substantial role in ensuring the effectiveness of efforts to prevent an accident. The less effective of bow thruster and anchor were the examples in this case. The evaluation of the safe speed should touch the practice of un/berthing for all vessels, not in the container port only.

The safe speed has been believed by many researchers and practitioners as the main element in reducing the risks in a limited waters. The environment of Bering Strait, for example, has made the Local Port Authorities to enact some law instruments to regulate the speed of passing

vessels (Huntington et al., 2015). The latent risks were not only the collision among the vessels, but also the marine pollution which usually costs much more than a collision. Thus, there was a strong need to evaluate those matters to derive the minimum navigable speed for assisting operations.

II.5.3.3. Contingency Plan

Because there is no plan that able to run without any issue, the safety system needs a backup plan to overtake malfunction. In the same way, the contingency plan should also be in the list of regulator's evaluation.

When the evaluation runs correctly, at least the contingency would encompass several important matters (Australian Maritime College, 2018). In specific, the allocation of duties amongst resources should parallel with the action should be taken were the ciritical points that need to be evaluated thoroughly. Otherwise, the insufficient resources could not ensure the plan to be carried out smoothly. To ensure this, the effective communication based on the role in the emergency situation would be needed. Not only amongst the port workers, but this needs to be extended to the external institutions that would be involved in dealing the unexpected situation. Not to mention, the procedure should also explain about the monitoring and reporting the circumstance.

The evaluation of contingency plan should cover the availability resources owned by the port service provider, for instance the boats, employees and equipment. More than this, the assessed procedure should also cover the external parties involved in dealing with a disaster or accident. This could be done easily only when the exercise was done in a correct manner. At this point, the need to evaluate the procedure of contingency plan needs to oversee the implementation level.

II.5.3.4. Tug Boats

The evaluation as asked by the Article 37 in the Ministerial Regulation by the Minister of Transportation No 57 Year 2015 on Pilotage and Towing ideally touches the implementation of performance standard, particularly regarding the number of tug boats used in delivering the service. One biggest reason for this circumstance was the lack of detail guidance of the evaluation for the regulator in the local harbour or port areas. Looking at the trend of cargo vessels which have become bigger than several years ago, there should be an extra caution and a deep evaluation in selecting power of tug boats for berthing and unberthing services.

The Charitable Trust Confidential Hazardous Incident Reporting Programme has raised the engine failure as one of serious moment threats in the marine safety. Those voluntary reports have involved the failure of main engine to start and associated issues. One measure that can be taken into consideration was the engine test witnessed by the Pilot prior to the vessel movement (Charitable Trust Confidential Hazardous Incident Reporting Programme, 2019).

Taking the importance of clarity of evaluation of the SOP in terms of safety of pilotage and towing, the guidance of evaluation should be established on the Minister of Transportation Regulation. The Legislation Regulation Act No 12 Year 2011, as revised by the Regulation Act No 15 Year 2019, clearly states that the lowest regulation in Indonesia which relates to the safety of marine transport is at the Minister of Transportation.

The Director General of Sea Transportation which is under the Minister of Transportation has no authority, based on those acts, to regulate external institutions, such as pilotage service or shipowner companies. Otherwise, the ministerial regulations have a strong binding and legal consequences if they were disobeyed by the pertinent organisations or person(s).

Therefore, there was a strong need to evaluate the Ministerial Regulation by the Minister of Transportation No 57 Year 2015 on Pilotage and Towing. Some aforementioned aspects are waiting to be revised immediately. Should the vagueness been solved, the SOP and its evaluation would be carried out in a clear direction. Also, the clear roles for the regulator and port service provider would enhance the share of works in terms of marine safety.

II.6. TEAMWORK

Situational awareness encompassed the work completed by all human resources onboard all ships as well as utilising all available equipment to support bridge crew's work. Whereas, teamwork means how ship crew, Pilot and tugs' crew work together to accomplish their common goal in berthing the *Soul Of Luck*.

II.6.1. Situational Awareness

The investigation team found that the crew members of *Soul Of Luck* could not ensure the readiness of the engine to move astern in berthing process. In the interview, the crew of *Soul Of Luck* acknowledged that the engine test held before departed from Malaysia and found no engine issue.

When the Pilot had been onboard the *Soul Of Luck*, the conversation between the Pilot and Master confirmed that there was no engine issue conveyed by the Master to the Pilot prior to the accident. Also, the Master informed a specific ability of bow thruster power to the Pilot. The conversation indicated that the *Soul Of Luck*'s crew did not expect any engine issue.

Situational awareness means having an accurate understanding of what is happening around the ship (the existing condition) and what is likely to happen (hard situation). The situational awareness also covers how to cope the unwanted situation based on the existing information (Sandhåland et al., 2015).

In the context of *Soul Of Luck* accident, this also means that the crew should ensure that the engine performance should be ready to be operated without any problem. At the accident, the crew were overreliance on the last engine test in the last port. After approached Semarang Port waters, the crew did not run the engine test again and directly proceeded to approach as per Pilot Station and Pilot information. After the engine was stopped, there was no astern test to ensure that the condition of engine was completely fine.

In consideration of hazards and limited waters in the Semarang Port basin, there should be a significant measure to prevent the unexpected situation. One significant attempt that could be done was the performance of engine system and supporting systems, particularly the engine control system. To undertake this, the whole systems related to engine performance of in/outbound vessel should be tested and witnessed by ship crew including the Pilot. This best practice has been adopted in the Panama Canal region for all passing vessels (Panama Canal Authority, 2020). Otherwise, the vessel owner company which has an objection to undertake the procedure should agree to bear all consequences and costs related to unwanted situation due to untested vessel.

Although there was no accident due to malfunction of the steering gear, ensuring the steering gear has an equal importance to the systems related to main engine performance. Moreover, the time needed to address the issue on the steering gear would not be enough if a vessel has a malfunction on the steering gear at the same location where *Soul Of Luck* was known had an engine control issue in the first place.

The situational awareness was extremely important to ensure the berthing process could run safely. There were some risks existed surrounding the *Soul Of Luck*, such as the other ships

–especially for both tanker and LPG carrier–as well as the other port facilities. The absence of ensuring the engine readiness reflected the lack of situational awareness since required by the STCW, particularly after the Manila amendments in 2010 (Oltedal & Lützhöft, 2018).

More details, the STCW Code Table A-III/1 on Specification of minimum standard of competence for officers in charge of an engineering watch in a manned engine-room or designated duty engineers in a periodically unmanned engine-room has stated the situational awareness. The tables require the ship crew to be able to apply the situational awareness to support the Engine-room Resource Management.

II.6.2. Task Dependency

Another factor which was strongly believed contributed the lack of situational awareness was the wrong mental model amongst the ship crew towards Pilot Station, Pilot and their roles. The interview of the Pilot and Master of *Soul Of Luck* revealed that each of them had a different point of view. The Pilot believed that the Master had more experience because the Master was a foreign sailor. This belief was also constructed based on some experience in dealing with foreign cruisers. The Masters of some cruise ships were reluctant to give the control to the Pilot while manoeuvring near the passenger terminal in Semarang Port. In addition, the Pilot knew that it was not the first time the Master of *Soul Of Luck* had been in Semarang.

On the contrary, the Master of *Soul Of Luck* believed that the Pilot knew more about the local environment in Tanjung Emas Port. Therefore, the Master counted on the Pilot. Despite the Master ordering the crew of *Soul Of Luck*, the commands were an echoing of the Pilot's request. The Master did not treat the Pilot's advice as a suggestion. The situation above identified the incorrect mental models which occurred in both minds of the Pilot and the Master which led to the development of their wrong mental models.

The relying of each other between the Pilot and Master of *Soul Of Luck* was worsen by the insufficient of briefing. Master of *Soul Of Luck* decided to enter the channel and pass the Buoy No 1 without Pilot onboard. This made a lack of time for undertaking the briefing. Instead of asking the ship to wait in the outer of channel, the ship was asked to enter the channel, so the Pilot boat and *Soul Of Luck* met in the middle of the channel.

In regards the mental models, several studies justified the importance of the briefing in minimising the incorrect perspective. In this accident, should the Pilot have discussed about the detail plan about berthing, i.e. the turning plan and hazards in the basin area, the Master could suggest an additional consideration related to the contingency plan which was none in the procedure of pilotage service.

II.6.3. Contingency Plan

Another issue appeared in the situational awareness was the lack of the contingency plan. If the original plan did not work properly, there should be another plan enforced to cope with unwanted circumstances. The contingency plan should be detailed in the procedure to enable for uniform implementation.

In this accident, no contingency plan appeared. When the *Soul of Luck*'s engine failed, the Pilot, ship crew as well as the tugs' crew did not know what to do, except to alter her heading southernly. Though the accidental plan worked in reducing the impact, the absence of the contingency plan should be taken into account to enhance the pilotage procedure.

In the situation of a ship's engine failure, the Pilot should apply the contingency plan either to release the anchor or to push the assisted ship away from hazardous areas to be grounded. When it is permitted, the tug boat should assist the ship back to the berthing location. Indeed,

this plan could only work when the ship's speed was reasonably slow, allowing assistance from the tugs. Therefore, the company should take the speed into account when setting up the contingency plan.

To reduce negative impact effectively, a third scenario should also be involved. The pilotage company could also prepare a spare tug boat with appropriate power. When a tug boat was late to depart due to a serious issue, for example, another else could be dispatched immediately to handle the service. In this case, another unit of tug boat with adequate power stands by at the location of tug boat *Anoman IV* would be a sufficient option. This will save the time and safety in the port area.

II.7. OTHER SAFETY ISSUES

II.7.1. Language Barrier

The teamwork onboard the *Soul Of Luck* was not optimal due to a language barrier. There were three languages used: Indonesian, English and Russian. By having three different languages present, this created a barrier amongst the entire crew as they could not understand their surroundings and what the commands were. The Pilot could have translated the conversation to the Master in Indonesian, however, translating sentences was proven to be ineffective as it would take time and could create a misunderstanding or conflicts amongst workers.

The use of specific language has not been determined yet by the national regulation. The Ministerial Decree by the Minister of Transportation No KP 475 Year 2015 on Regulations of Determination of Marine Channel, Routing System, Navigational and Anchorage Areas in Tanjung Emas Semarang has set a language standard for working, specifically English or Indonesian. The main point in the regulation was that it was an option (OR) to choose either English or Indonesian to communicate. Moreover, there was no local agreement or procedure in the Semarang waters to use English in specific works or days. This situation has led most of the frontline workers prefer to use Indonesian, unless for those who need to deal with the foreigners directly.

The worst impact of language differences in a working environment was when members lost the chance to revise or confirm any command or action, therefore resulting in an accident. An accident occurred in 2018, when a crude oil pipe was dragged and cut by an anchor due to an incorrect translation of a command from one foreign language to another foreign language (Komite Nasional Keselamatan Transportasi, 2019).

The appearance of three different languages was because no rules were implemented to use a single language onboard the assisted ship. The procedure did not require the Pilot nor the ship crew to use English in their conversation.

II.7.2. Safety at Work Place

Referring to the procedure of operation of tug and pilot boat issued on 1 August 2018, Masters of tug boat are required to prepare the VASA system on their electronic gadget. Refer to the information from the Pilotage company, perhaps the Master of *Jayanegara 201* was using the VASA application during his work to assist the *Soul Of Luck*.

Regardless the application type that was being used by the Master of tug boat, the use of mobile phone needs to be reviewed. Although in this case the Master still could be aware about the situation, the worse condition might be occurred when the mobile successfully takes the attention of other Masters of tug boat.

The pilotage company could compare the procedure of the mobile for the other employees, without disregard their responsibility and level. The existing procedure regarding the prohibition of using mobile phone was only for the gantry operator which stated in the document of *Prosedur Mutu Pengoperasian Container Crane*. Therefore, law enforcement towards someone uses mobile phone whilst working on the tug boat could not be taken. Without any clear rules of works, the service completed by each individual would vary, depending on their personal interpretation.

Those findings demonstrated that the evaluation of employees' performance was insufficient. By having many CCTV cameras, the company should be able to undertake a thorough evaluation. Considering the shifting in the channel, berthing and unberthing are the most critical situations in which the company should pay more attention to.

There was no record about the evaluation of the work implementation done by any companies involved in the accident. The CCTV footage owned by the pilotage service company was a vital source for the evaluation. This accident, should be an impetus for the managerial level in the company to leverage the CCTV recordings to revise and develop any gaps that they have found.

II.7.3. Anchorage Areas and Pilotage Waters

However, there was a typing error in the Official Regulation by the Harbour Master of Tanjung Emas in terms of the anchorage area. If the coordinate of Emergency Area is plotted to the chart/map, it would have a triangle shape, instead of square due to a wrong point. In the harbour Master regulation, one of the coordinates was written 06º 50', which was supposed to be 06º 51'. The comparison between the Ministerial Decree by the Minister of Transportation KP 475 and Official Regulation by the Harbour Master of Tanjung Emas KP.105 is described in the below figure.

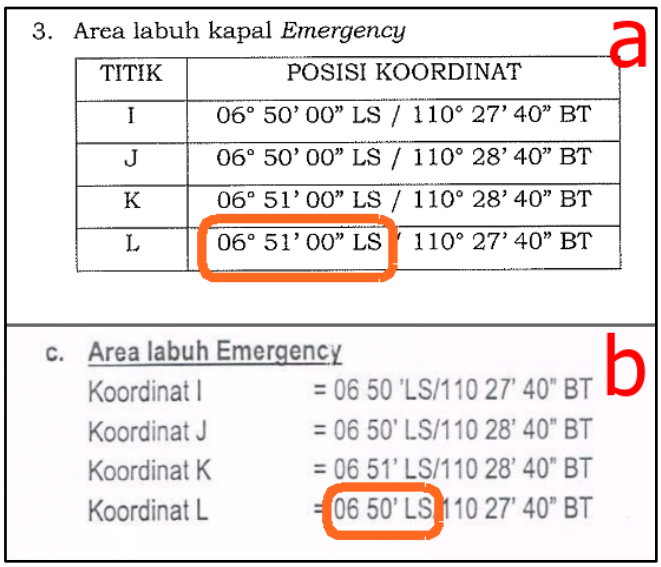

Figure II-6: Points of Emergency Area in the Ministerial Decree by the Minister of Transportation KP 475 (a) and Official Regulation by the Harbour Master of Tanjung Emas KP.105 (b)

Another typo was also found in the Official Regulation by the Harbour Master of Tanjung Emas No KP.105/06/07/KSOP.Tg.Emas-16 on Procedures of Pilotage. One reference coordinate of Pilotage Waters was different than the superior rule, specifically the Ministerial Decree by the Minister of Transportation No 22 Year 1990 on Decision of Level of Pilotage Waters. It was

written 110º 20', while the correct coordinate was 110º 26'. This error might from the unclear characters as the regulation was issued in 1990 when the quality of typing machine was very limited.

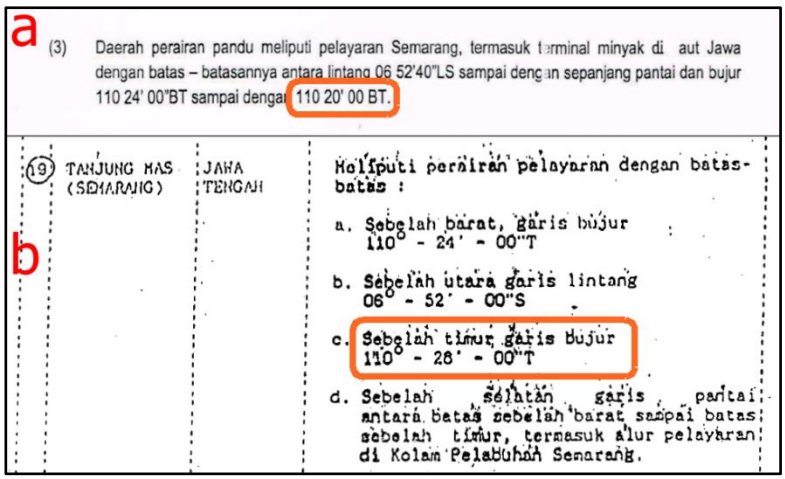

Figure II-7: Points of Pilotage Waters in the Official Regulation by the Harbour Master of Tanjung Emas KP.105 (a) and the Ministerial Decree by the Minister of Transportation 22 (b)

The Ministerial Regulation by the Minister of Transportation No 57 Year 2015 on Pilotage and Towing at the Article 6, Verse 1 states that the anchorage areas and the PBGs should be displayed on the nautical chart, both in paper and electronic types.

Nonetheless, there was no anchorage area in the Nautical Chart No 91. As the area already enacted in the Ministerial Decree by the Minister of Transportation KP 475, it should appear in the Nautical Chart No 91 as well. Thus, the chart needs to be revised to match the national regulations.

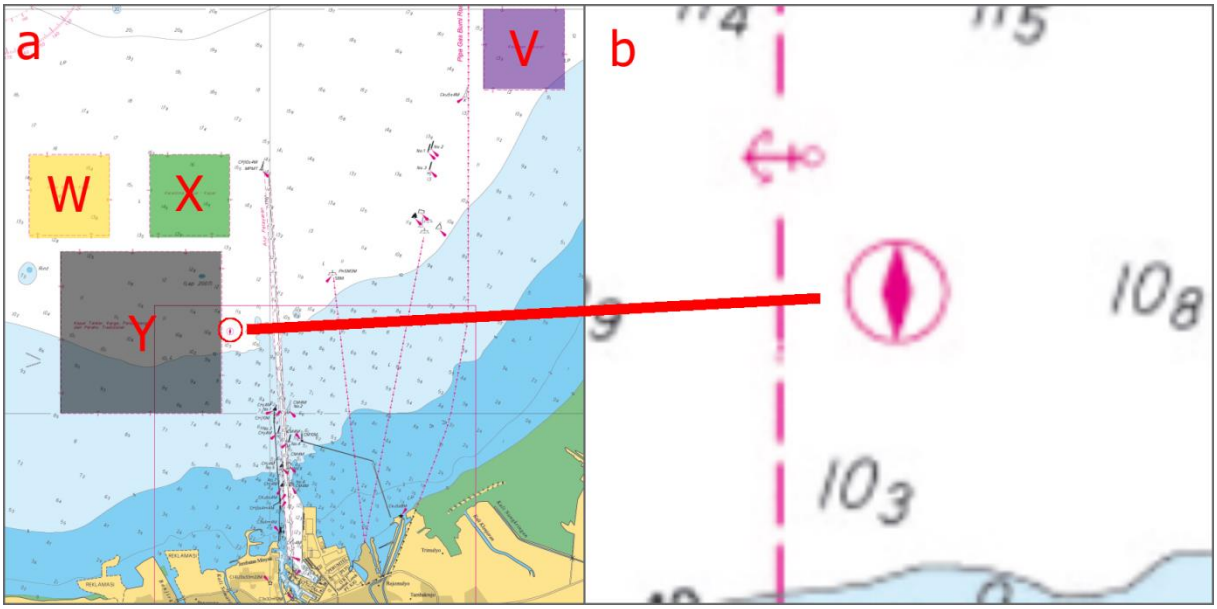

Figure II-8: Areas of: V) Emergency anchorage; W) Ship-to-ship cargo transfer; X) Quarantine; Y) Anchorage for tanker, cargo, passenger and wooden ship as well as the PBG in the Indonesian Nautical Chart No 91 (2019).

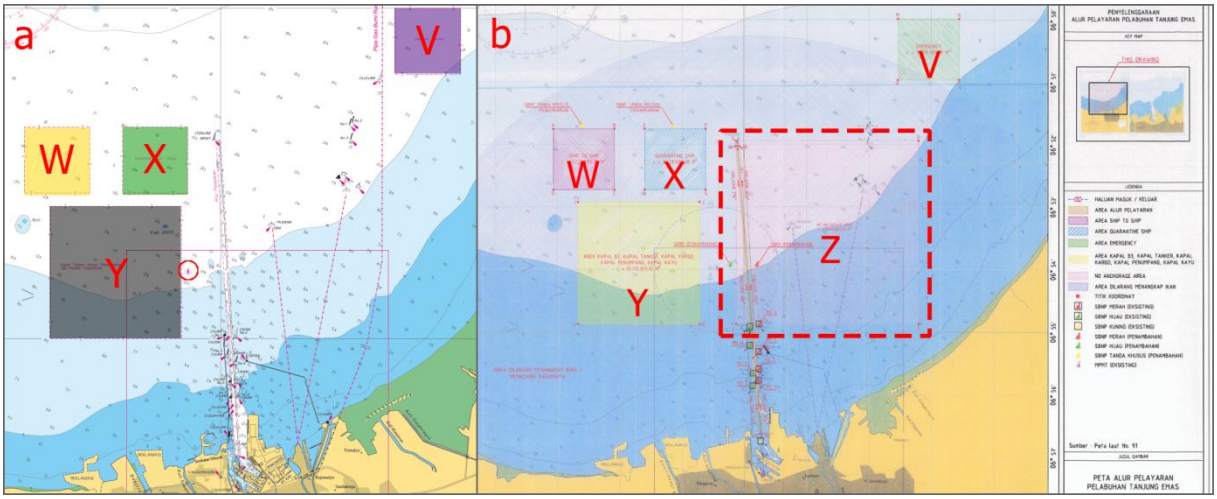

Figure II-9: The no anchorage area(Z mark) in the Nautical Chart No 91 (a) and in the Ministerial Decree by the Minister of Transportation KP 475 (b)

III. SUMMARY

III.1. FINDINGS

1. There was no maintenance record regarding the pneumatic engine control onboard the *Soul Of Luck*.
2. The emergency response checklists for engine control failure was not available.
3. The Bridge Resources Management needs an improvement.
4. There crew of *Soul Of Luck* came up late to the forecastle to fasten the tug line.
5. There was an incomplete guidance to undertake the oversight of performance standard of towing and pilotage services.
6. The language used in pilotage and towing operations was not determined clearly.
7. There was a need to improve the VASA system.
8. The Indonesian Nautical Chart No 91 needs to be evaluated.
9. The Procedure of local Harbour Master needs to be reviewed.
10. The bow thruster was not in operation prior to the allision.
11. The anchor was not ready in emergency situation.

III.2. CONTRIBUTING FACTORS[10]

1. The engine control malfunction of *Soul Of Luck*.
2. The engine control malfunction occurred when the *Soul Of Luck* was too close to the wharf.

[10] Contributing factors are anything which might be the source of an accident. In terms of any act, negligence, condition or situation in which avoided or diminished would prevent an accident or reduce the impacts.

IV. RECOMMENDATIONS

Based on the allision of container gantry crane with *Soul Of Luck*, the National Transportation Safety Committee (KNKT) recommends following matters to the interested parties to prevent the recurrence of a similar accident in the future.

Referring to the Government Regulation of Transportation Accident Investigations No 62 Year 2013, Article 47 suggested that the interested parties should follow up on the safety recommendations from this report and report the progress of those recommendations to the chairman of the KNKT.

IV.1. MINISTRY OF TRANSPORTATION

IV.1.1. DIRECTORATE GENERAL OF SEA TRANSPORTATION

1. To review the Ministerial Regulation by the Minister of Transportation No 57 Year 2015 on Pilotage and Towing in terms of oversight the towing and pilotage services.
2. To review the Ministerial Decree by the Minister of Transportation No KP 475 Year 2015 on Regulations of Determination of Marine Channel, Routing System, Navigational and Anchorage Areas in Tanjung Emas Semarang, particularly in respect to the language used in towing and pilotage services.

Until the final report is issued, the KNKT had not received safety actions yet following the recommendations.

Status: Open

IV.1.2. HARBOUR MASTER OFFICE OF TANJUNG EMAS CLASS I

1. To review the Official Regulation by the Harbour Master of Tanjung Emas No KP.105/06/07/KSOP.Tg.Emas-16 on Procedures of Pilotage in terms of mandatory pilotage area.
2. To ensure all navigational features in the Indonesian Nautical Chart No 91 are harmonised with the valid regulations.
3. To undertake the oversight of performance standard of towing and pilotage services.

Until the final report is issued, the KNKT had not received safety actions yet following the recommendations.

Status: Open

IV.2. PT PELABUHAN INDONESIA III (PERSERO)

IV.2.1. HEADQUARTERS OF PT PELABUHAN INDONESIA III (PERSERO)

1. To evaluate all procedures set by the branch offices.
2. To ensure that the procedures set by the branch offices are tested in their routine drills and reviewed regularly.

Until the final report is issued, the KNKT had not received safety actions yet following the recommendations.

Status: Open

IV.2.2. PT PELABUHAN INDONESIA III (PERSERO) BRANCH OF TANJUNG EMAS

1. To revise the procedure of the pilotage service with respect to the IMO Resolution A.960(23) and contains:
    a. the situational awareness;
    b. the procedure of berthing and assisting a ship, including briefing with Master;
    c. the berthing method and turning point;
    d. the contingency plan and emergency situations;
    e. the use of a single language (marine English);
    f. the safe speed of assisted vessel associated with the type, size and minimum navigable speed in the prevailing condition.
2. To improve the VASA system, considering the Ministerial Regulation by the Minister of Transportation No 57 Year 2015 on Pilotage and Towing.
3. To ensure that the Pilot on duty witnesses the successful of Main Engine and Steering Gear tests (astern and ahead) for all assisted vessels before entering and leaving the port.

Until the final report is issued, the KNKT had not received safety actions yet following the recommendations.

Status: Open

IV.2.3. PT PELINDO MARINE SERVICE

1. To revise the procedure of towing service by considering:
    a. the details of the coordination amongst the Pilot and tug boats' crew;
    b. the berthing method and turning point;
    c. the contingency plan and emergency situations;
    d. the use of a single language (marine English);
    e. the safe speed of assisted vessel associated with the type, size and minimum navigable speed in the prevailing condition.

2. To ensure the evaluation of work for the tug boats' crew in regards the safety at work is effective.

Until the final report is issued, the KNKT had not received safety actions yet following the recommendations.

Status: Open

IV.3. VICTORIA OCEANWAY LTD. (MANAGING OWNER) AND OSIER HOLDING S.A. (REGISTERED OWNER)

1. To ensure that the Master always has the rights to:
   a. take control of the ship;
   b. refuse the assistance in case of an unsafe condition.
2. To ensure all crew on duty always have situational awareness.
3. To review the standard procedures, by considering:
   a. the maintenance record of the pneumatic valve in the main engine control;
   b. the emergency response checklists for engine control failure;
   c. the tests of Main Engine and Steering Gear (astern and ahead) before entering and leaving the port;
   d. the plan of safe journey in limited waters;
   e. the assistance for the tug boat crew when fastening the tug line;
   f. the use of bow thruster and anchor in emergency situation.

Until the final report is issued, the KNKT had not received safety actions yet following the recommendations.

Status: Open

SOURCES OF INFORMATION

Crew members of *Soul Of Luck*.

Harbour Master of Tanjung Emas.

MAN B&W - MAN Energy Solutions.

Nippon Kaiji Kyokai Classification.

PT Pelabuhan Indonesia III (PERSERO) Branch of Tanjung Emas.

PT Pelindo Marine Service.

Semarang Vessel Traffic Service.

Simplified Voyage Data Recorder of *Soul Of Luck*.

REGULATIONS

Convention on the International Regulations for Preventing Collisions at Sea (COLREGs) 1972.

Convention on the Standards of Training, Certification & Watchkeeping for Seafarers (STCW).

Decree of the Minister of Transportation No KP.603 Year 2012 on Permit for PT Pelabuhan Indonesia to Provide Pilotage Service.

Directoral Regulation by the Director General of Sea Transportation No HK.103/2/14/djpl-16 Year 2016.

Legislation Regulation Act No 12 Year 2011.

Legislation Regulation Act No 15 Year 2019.

Ministerial Decree of the Minister of Transportation No 22 Year 1990 on Decision of Level of Pilotage Waters.

Ministerial Decree of the Minister of Transportation No KP 475 Year 2015 on Regulations of Determination of Marine Channel, Routing System, Navigational and Anchorage Areas in Tanjung Emas Semarang

Ministerial Regulation by the Minister of Transportation No 15 Year 2016 on State Revenues Other Than Tax.

Ministerial Regulation by the Minister of Transportation No 18 Year 2013 on Master Plan of Tanjung Emas Port.

Ministerial Regulation by the Minister of Transportation No 57 Year 2015 on Pilotage and Towing.

Official Regulation by the Harbour Master of Tanjung Emas No KP.105/06/07/KSOP.Tg.Emas-16 on Procedures of Pilotage.

Resolution of the IMO A.960(23) on Recommendations on Training and Certification and on Operational Procedures for Maritime Pilots Other Than Deep-Sea Pilots.

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APPENDIX

CLOSING RECOMMENDATIONS OF HEADQUARTERS OF PT PELABUHAN INDONESIA III (PERSERO)

Closing Recommendation
PT Pelabuhan Indonesia III (Persero)
Head Office

Maret 2021

Recommendation Headquarters of PT Pelabuhan Indonesia III (Persero)

KOMITE NASIONAL KESELAMATAN TRANSPORTASI

Soul Of Luck, Port of Tanjung Emas, 14 July 2019

IV.2. PT PELABUHAN INDONESIA III (PERSERO)

IV.2.1. HEADQUARTERS OF PT PELABUHAN INDONESIA III (PERSERO)

1. To evaluate all procedures set by the branch offices.
2. To ensure that the procedures set by the branch offices are tested in their routine drills and reviewed regularly.

Until the final report is issued, the KNKT had not received safety actions yet following the recommendations.

Status: Open

IV.2.2. PT PELABUHAN INDONESIA III (PERSERO) BRANCH OF TANJUNG EMAS

1. To revise the procedure of the pilotage service with respect to the IMO Resolution A.960(23) and contains:
   a. the situational awareness;
   b. the procedure of berthing and assisting a ship, including briefing with Master;
   c. the berthing method and turning point;
   d. the contingency plan and emergency situations;
   e. the use of a single language (marine English);
   f. the safe speed of assisted vessel associated with the type, size and minimum navigable speed in the prevailing condition.
2. To improve the VASA system, considering the Ministerial Regulation by the Minister of Transportation No 57 Year 2015 on Pilotage and Towing.
3. To ensure that the Pilot on duty witnesses the successful of Main Engine and Steering Gear tests (astern and ahead) for all assisted vessels before entering and leaving the port.

Until the final report is issued, the KNKT had not received safety actions yet following the recommendations.

Status: Open

1

To evaluate all procedures set by the branch office

Recomendation	Answer
To evaluate all procedures set by the branch office	As per warrant from Director of Operations and Commercials No. PJ.01.02/26/HOFC-2021. 5^{th} of March 2021 about Standard Operating Procedures for Pilotage Service Review and Use of Standard Maritime Communication and Phrases (SMCP)

PELINDO III
Beyond Port of Indonesia

Surabaya, 05 Maret 2021

Nomor : PJ.01.02/26/HOFC-2021
Klasifikasi : Penting
Perihal : Reviu Standard Operating Procedure (SOP) Pelayanan Pemanduan dan Penggunaan Standard Marine Communication Phrases (SMCP)

Kepada
Yth. :
1. DIREKTUR UTAMA PT TERMINAL PETIKEMAS SURABAYA
2. DIREKTUR UTAMA PT. TERMINAL TELUK LAMONG
3. DIREKTUR UTAMA PT BERLIAN JASA TERMINAL INDONESIA
4. DIREKTUR UTAMA PMS PT PELINDO MARINE SERVICE
5. CEO REGIONAL JAWA TENGAH PELINDO III
6. CEO REGIONAL KALIMANTAN PELINDO III
7. CEO REGIONAL BALI NUSRA PELINDO III
8. Plh. CEO REGIONAL JATIM PELINDO III

di
Tempat

Memperhatikan Draft Final *Marine Accident Investigation Report* dari Komite Nasional Keselamatan Transportasi Republik Indonesia nomor: KNKT.19.07.16.03 tentang *Allision of* Soul of Luck *with Container Gantry Crane in Port of Tanjung Emas, Central Java, Republik of Indonesia*, bahwa Komite Nasional Keselamatan Transportasi Republik Indonesia telah memberikan rekomendasi dalam rangka untuk mencegah terulangnya kejadian serupa di kemudian hari.

Sebagai tindak lanjut hal tersebut di atas, para CEO Regional, para General Manager Pelabuhan Wajib Pandu, dan para Direksi Anak Perusahaan supaya melakukan beberapa hal sebagai berikut:

1. Melakukan reviu terhadap *Standard Operating Procedure* (SOP) pelayanan pemanduan bersama Kantor Kesyahbandaran dan Otoritas Pelabuhan (KSOP) setempat berdasarkan IMO Resolution A.960(23) antara lain terdiri dari:
   a. Kondisi perairan wajib pandu dan lingkungan (cuaca, trafik, arus, angin, dan alur) setempat
   b. Prosedur penyandaran dan penundaan kapal
   c. Tata cara tukar menukar informasi kondisi kapal antara Petugas Pandu dan Nahkoda kapal (*Pilot Exchange Information*)
   d. Lokasi titik putar kapal (*Turning Point*) pada saat proses penyandaran kapal
   e. Prosedur pelayanan pada saat kondisi darurat (*Emergency Situations*)
   f. Standar kecepatan kapal (*Safe Speed*) pada saat dilakukan pelayanan penundaan menyesuaikan dengan tipe, ukuran, dan navigasi kapal
   g. Tata cara koordinasi antara Petugas Pandu dan ABK (Anak Buah Kapal) Kapal Tunda dalam pelaksanaan pelayanan.
2. Dalam setiap pelayanan jasa kapal pada perairan wajib pandu di lingkungan PT Pelabuhan Indonesia III (Persero) supaya menggunakan standar bahasa sesuai dengan *Standard Marine Communication Phrases* (SMCP) sebagaimana terlampir.
3. PT Pelindo Marine Service supaya memastikan bahwa pelayanan penundaan yang dilakukan oleh ABK (Anak Buah Kapal) Kapal Tunda, telah dilaksanakan berdasarkan standar keselamatan kerja secara efektif.
4. Melaporkan hasil pelaksanaannya kepada Direktur Operasi dan Komersial cq. Sub Direktorat Pelayanan Kapal pada kesempatan pertama.

Demikian disampaikan untuk menjadi perhatian dan sebagai pedoman pelaksanaan.

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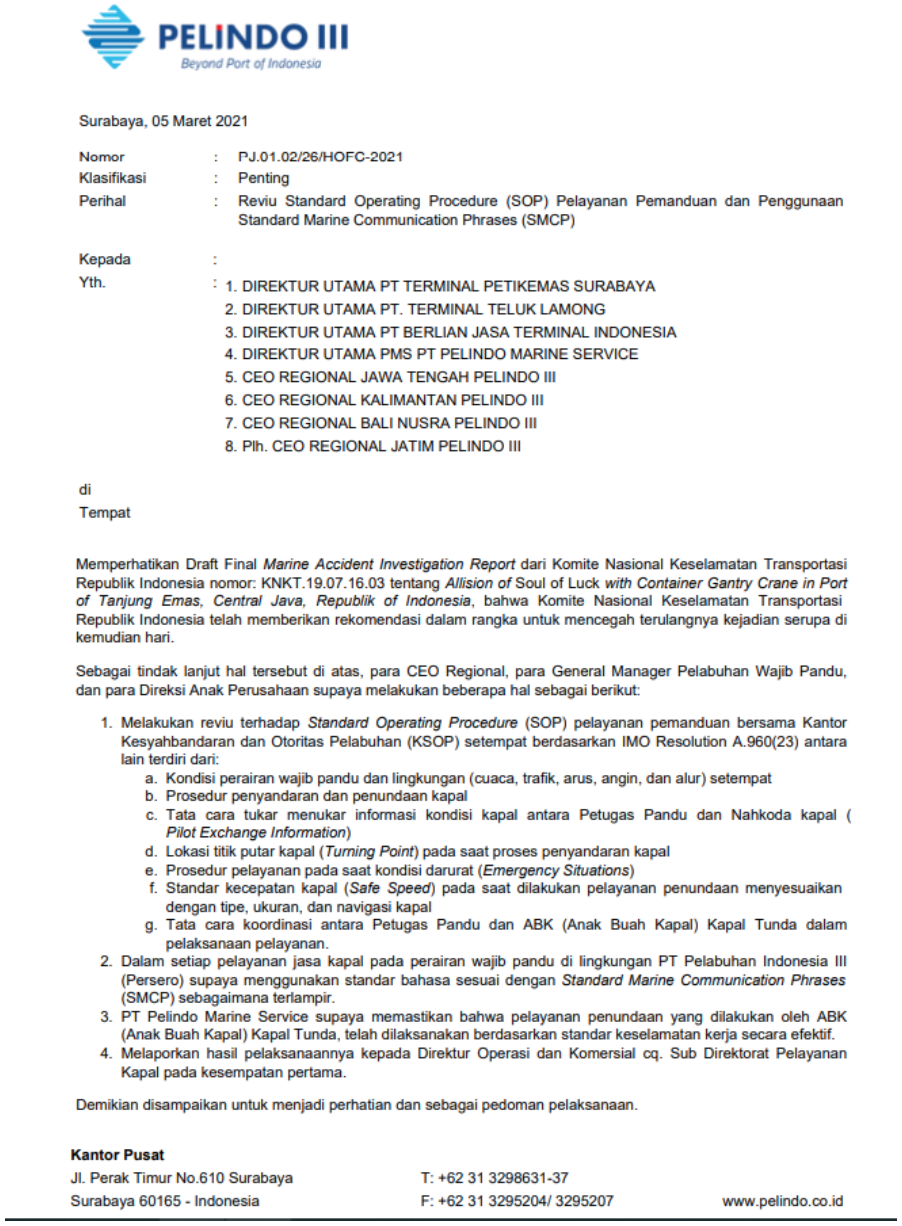
2

To ensure that the procedures set by the branch offices are tested in their routine drills and reviewed regularly

Finding	Jawaban
To ensure that the procedures set by the branch offices are tested in their routine drills and reviewed regularly	As per warrant from Director of Operations and Commercials No. PJ.01.02/26/HOFC-2021. 5^{th} of March 2021 about Standard Operating Procedures for Pilotage Service Review and Use of Standard Maritime Communication and Phrases (SMCP)



PELINDO III
Beyond Port of Indonesia

Surabaya, 05 Maret 2021

Nomor : PJ.01.02/26/HOFC-2021
Klasifikasi : Penting
Perihal : Reviu Standard Operating Procedure (SOP) Pelayanan Pemanduan dan Penggunaan Standard Marine Communication Phrases (SMCP)

Kepada
Yth. :
1. DIREKTUR UTAMA PT TERMINAL PETIKEMAS SURABAYA
2. DIREKTUR UTAMA PT. TERMINAL TELUK LAMONG
3. DIREKTUR UTAMA PT BERLIAN JASA TERMINAL INDONESIA
4. DIREKTUR UTAMA PMS PT PELINDO MARINE SERVICE
5. CEO REGIONAL JAWA TENGAH PELINDO III
6. CEO REGIONAL KALIMANTAN PELINDO III
7. CEO REGIONAL BALI NUSRA PELINDO III
8. Plh. CEO REGIONAL JATIM PELINDO III

di
Tempat

Memperhatikan Draft Final *Marine Accident Investigation Report* dari Komite Nasional Keselamatan Transportasi Republik Indonesia nomor: KNKT.19.07.16.03 tentang *Allision of* Soul of Luck *with Container Gantry Crane in Port of Tanjung Emas, Central Java, Republik of Indonesia*, bahwa Komite Nasional Keselamatan Transportasi Republik Indonesia telah memberikan rekomendasi dalam rangka untuk mencegah terulangnya kejadian serupa di kemudian hari.

Sebagai tindak lanjut hal tersebut di atas, para CEO Regional, para General Manager Pelabuhan Wajib Pandu, dan para Direksi Anak Perusahaan supaya melakukan beberapa hal sebagai berikut:

1. Melakukan reviu terhadap *Standard Operating Procedure* (SOP) pelayanan pemanduan bersama Kantor Kesyahbandaran dan Otoritas Pelabuhan (KSOP) setempat berdasarkan IMO Resolution A.960(23) antara lain terdiri dari:
   a. Kondisi perairan wajib pandu dan lingkungan (cuaca, trafik, arus, angin, dan alur) setempat
   b. Prosedur penyandaran dan penundaan kapal
   c. Tata cara tukar menukar informasi kondisi kapal antara Petugas Pandu dan Nahkoda kapal (*Pilot Exchange Information*)
   d. Lokasi titik putar kapal (*Turning Point*) pada saat proses penyandaran kapal
   e. Prosedur pelayanan pada saat kondisi darurat (*Emergency Situations*)
   f. Standar kecepatan kapal (*Safe Speed*) pada saat dilakukan pelayanan penundaan menyesuaikan dengan tipe, ukuran, dan navigasi kapal
   g. Tata cara koordinasi antara Petugas Pandu dan ABK (Anak Buah Kapal) Kapal Tunda dalam pelaksanaan pelayanan.
2. Dalam setiap pelayanan jasa kapal pada perairan wajib pandu di lingkungan PT Pelabuhan Indonesia III (Persero) supaya menggunakan standar bahasa sesuai dengan *Standard Marine Communication Phrases* (SMCP) sebagaimana terlampir.
3. PT Pelindo Marine Service supaya memastikan bahwa pelayanan penundaan yang dilakukan oleh ABK (Anak Buah Kapal) Kapal Tunda, telah dilaksanakan berdasarkan standar keselamatan kerja secara efektif.
4. Melaporkan hasil pelaksanaannya kepada Direktur Operasi dan Komersial cq. Sub Direktorat Pelayanan Kapal pada kesempatan pertama.

Demikian disampaikan untuk menjadi perhatian dan sebagai pedoman pelaksanaan.

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LAMPIRAN

PELINDO III
Beyond Port of Indonesia

Surabaya, 05 Maret 2021

Nomor : PJ.01.02/26/HOFC-2021
Klasifikasi : Penting
Perihal : Reviu Standard Operating Procedure (SOP) Pelayanan Pemanduan dan Penggunaan Standard Marine Communication Phrases (SMCP)

Kepada
Yth. :
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6. CEO REGIONAL KALIMANTAN PELINDO III
7. CEO REGIONAL BALI NUSRA PELINDO III
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di
Tempat

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1. Melakukan reviu terhadap *Standard Operating Procedure* (SOP) pelayanan pemanduan bersama Kantor Kesyahbandaran dan Otoritas Pelabuhan (KSOP) setempat berdasarkan IMO Resolution A.960(23) antara lain terdiri dari:
   a. Kondisi perairan wajib pandu dan lingkungan (cuaca, trafik, arus, angin, dan alur) setempat
   b. Prosedur penyandaran dan penundaan kapal
   c. Tata cara tukar menukar informasi kondisi kapal antara Petugas Pandu dan Nahkoda kapal (*Pilot Exchange Information*)
   d. Lokasi titik putar kapal (*Turning Point*) pada saat proses penyandaran kapal
   e. Prosedur pelayanan pada saat kondisi darurat (*Emergency Situations*)
   f. Standar kecepatan kapal (*Safe Speed*) pada saat dilakukan pelayanan penundaan menyesuaikan dengan tipe, ukuran, dan navigasi kapal
   g. Tata cara koordinasi antara Petugas Pandu dan ABK (Anak Buah Kapal) Kapal Tunda dalam pelaksanaan pelayanan.
2. Dalam setiap pelayanan jasa kapal pada perairan wajib pandu di lingkungan PT Pelabuhan Indonesia III (Persero) supaya menggunakan standar bahasa sesuai dengan *Standard Marine Communication Phrases* (SMCP) sebagaimana terlampir.
3. PT Pelindo Marine Service supaya memastikan bahwa pelayanan penundaan yang dilakukan oleh ABK (Anak Buah Kapal) Kapal Tunda, telah dilaksanakan berdasarkan standar keselamatan kerja secara efektif.
4. Melaporkan hasil pelaksanaannya kepada Direktur Operasi dan Komersial cq. Sub Direktorat Pelayanan Kapal pada kesempatan pertama.

Demikian disampaikan untuk menjadi perhatian dan sebagai pedoman pelaksanaan.

Kantor Pusat
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PT PELABUHAN INDONESIA III (PERSERO)
DIREKTUR OPERASI DAN KOMERSIAL PELINDO III,

PUTUT SRI MULJANTO

Tembusan :
1. GENERAL MANAGER JAMRUD PELINDO III
2. GENERAL MANAGER NILAM MIRAH PELINDO III
3. GENERAL MANAGER KALIMAS PELINDO III
4. GENERAL MANAGER GRESIK PELINDO III
5. GENERAL MANAGER TANJUNG WANGI PELINDO III
6. GENERAL MANAGER TANJUNG EMAS PELINDO III
7. GENERAL MANAGER TPKS PELINDO III
8. GENERAL MANAGER TANJUNG INTAN PELINDO III
9. GENERAL MANAGER TRISAKTI PELINDO III
10. GENERAL MANAGER TPKB PELINDO III
11. GENERAL MANAGER KOTABARU PELINDO III
12. GENERAL MANAGER BATULICIN PELINDO III
13. GENERAL MANAGER BAGENDANG PELINDO III
14. GENERAL MANAGER BUMIHARJO PELINDO III
15. GENERAL MANAGER BENOA PELINDO III
16. GENERAL MANAGER LEMBAR PELINDO III
17. GENERAL MANAGER TENAU KUPANG PELINDO III

CLOSING RECOMMENDATIONS OF PT PELABUHAN INDONESIA III (PERSERO) BRANCH OF TANJUNG EMAS

Closing Recommendation
PT Pelabuhan Indonesia III (Persero)
Branch Of Tanjung Emas Semarang

Maret 2021

Recommendation PT Pelabuhan Indonesia III (Persero) Branch Of Tanjung Emas Semarang

1. To evaluate all procedures set by the branch offices.
2. To ensure that the procedures set by the branch offices are tested in their routine drills and reviewed regularly.

Until the final report is issued, the KNKT had not received safety actions yet following the recommendations.

Status: Open

IV.2.2. PT PELABUHAN INDONESIA III (PERSERO) BRANCH OF TANJUNG EMAS

1. To revise the procedure of the pilotage service with respect to the IMO Resolution A.960(23) and contains:
   a. the situational awareness;
   b. the procedure of berthing and assisting a ship, including briefing with Master;
   c. the berthing method and turning point;
   d. the contingency plan and emergency situations;
   e. the use of a single language (marine English);
   f. the safe speed of assisted vessel associated with the type, size and minimum navigable speed in the prevailing condition.
2. To improve the VASA system, considering the Ministerial Regulation by the Minister of Transportation No 57 Year 2015 on Pilotage and Towing.
3. To ensure that the Pilot on duty witnesses the successful of Main Engine and Steering Gear tests (astern and ahead) for all assisted vessels before entering and leaving the port.

Until the final report is issued, the KNKT had not received safety actions yet following the recommendations.

Status: Open

IV.2.3. PT PELINDO MARINE SERVICE

1. To revise the procedure of towing service by considering:
   a. the details of the coordination amongst the Pilot and tug boats' crew;
   b. the berthing method and turning point;
   c. the contingency plan and emergency situations;

1.a

To revise the procedure of pilotage service with respect to the IMO Resolutions A.960 (23) and Contains

Recommendation	Jawaban
The situational awareness	Surat Keputusan KSOP Pelabuhan kelas I Tanjung Emas Nomor KP.006/03/19/KSOP. Tg Emas-19 tentang sistem dan prosedur pemanduan dan penundaan kapal di pelabuhan Tanjung Emas Semarang (Bab III Pasal 6 Ayat 4, hal 10)

(4) Pandu yang menerima Surat Perintah Kerja (SPK) memandu melaksanakan persiapan kegiatan pemanduan dan penundaan meliputi sebagai berikut:

a. Memastikan keselamatan serta kesiapan alur dan fasilitas pelabuhan untuk kegiatan pemanduan dan penundaan;
b. Mengecek kondisi cuaca, kecepatan angin, prakiraan arus dan prakiraan tinggi gelombang;
c. Memberikan informasi ketersediaan lokasi tujuan kegiatan pemanduan dan penundaan, baik kolam, rede atau tambatan;
d. Mengetahui dimensi kapal (jenis, panjang, draft, dan GRT) dan muatannya (jenis dan jumlahnya);
e. Mengecek kondisi dan posisi kapal yang akan dipandu, serta berkomunikasi dengan Nakhoda untuk persiapan kegiatan pemanduan dan penundaan untuk kapal asing wajib menggunakan bahasa Inggris;
f. Mengecek kesiapan dan ketersediaan Sarana Bantu Pelayanan Pemanduan dan penundaan;
g. Memastikan kekuatan tali tunda mempunyai kekuatan yang cukup untuk mepertahankan (HOLD) kapal dalam kondisi apapun;
h. Naik kapal di buoy MPTP / Outer Buoy / Buoy pengenal dan melapor ke VTS baik naik atau turun kapal;
i. Mengisi Check List tentang kapal yang akan dipandu serta sarana pemanduan dan penundaan yang dipakai saat pemanduan;
j. Memastikan ketersediaan lokasi tujuan kegiatan pemanduan, baik kolam, rede, atau tambatan.

1.b

To revise the procedure of pilotage service with respect to the IMO Resolutions A.960 (23) and Contains

Recommendation	Jawaban
The procedure of berthing and assisting a ship including briefing with master	Surat Keputusan KSOP Pelabuhan kelas I Tanjung Emas Nomor KP.006/03/19/KSOP. Tg Emas-19 tentang sistem dan prosedur pemanduan dan penundaan kapal di pelabuhan Tanjung Emas Semarang (Bab III Pasal 6 Ayat 5, hal 11) Terlampir checklist Pilot master Exchange Terlampir video Pilot master Exchange

(5) Setelah berada di atas kapal, Pandudan Nakhoda segera melakukan pertukaran informasi (*Pilot Master Information Exchange*) antara lain:

a. Informasi yang diberikan Nakhoda kepada Pandu meliputi :
   i. *Ships Particulars;*
   ii. Karakteristik sistema kemudi dan sudah melaksanakan *steering tested;*
   iii. Karakteristik mesin dan sudah melaksanakan *engine tested;*
   iv. *Winch standby* dan siap dioperasikan;
   v. *Emergency towing lines* siap muka belakang;
   vi. *Bow truster* dalam kondisi *standby* dan siap digunakan;
   vii. Perwira *standby* masing-masing muka belakang;
   viii. Data uji *turning circle*, zig zag manuvering, *crash stopping* terdapat dianjungan terlampir dan disampaikan;
   ix. Karakteristik olah gerak kapal;
   x. Alat navigasi;
   xi. Peta yang digunakan;
   xii. Tipe jangkar;

b. Informasi yang diberikan Pandu kepada Nakhoda meliputi :
   i. Tipe alur pelayaran;
   ii. Kondisi lalu lintas kapal;
   iii. Keadaan unsur cuaca setempat meliputi kondisi cuaca, kecepatan angin, prakiraan arus dan prakiraan tinggi gelombang;
   iv. Jumlah tunda yang akan digunakan;
   v. Kekuatan tali;
   vi. Memberikan informasi tentang kekuatan *bollard pul;*
   vii. Ploting sandar dan waktu sandar;
   viii. Maksimal draf yang diijinkan;
   ix. Minimal UKC yang diijinkan;

1.c

To revise the procedure of pilotage service with respect to the IMO Resolutions A.960 (23) and Contains

Recommendation	Jawaban
The berthing method and turning point	Surat Keputusan KSOP Pelabuhan kelas I Tanjung Emas Nomor KP.006/03/19/KSOP. Tg Emas-19 tentang sistem dan prosedur pemanduan dan penundaan kapal di pelabuhan Tanjung Emas Semarang (Bab III Pasal 7 hal 13)

PEMANDUAN KAPAL SANDAR

Pasal 7

(1) Penyandaran kapal di Terminal TPKS, Samudera, Nusantara, PLTU, Jetty, Terminal Pelabuhan Dalam, dan TUKS diusahakan sedapat mungkin dengan posisi haluan menghadap keluar *(bowout)*, namun dalam situasi tertentu untuk keselamatan dapat disesuaikan dengan kondisi di lapangan, dan disampaikan kepada Deputi Manager Pelayanan Pemanduan Kapal serta berkoordinasi dengan Kantor KSOP.

(2) Kapal tender (ditambatkan pada kapal lain yang sedang sandar), hanya dapat dilakukan dengan persetujuan Kantor KSOP, yaitu untuk :
a. kapal yang bertambat di tambatan pelayaran rakyat;
b. Kapal Negara;
c. kapal yang melakukan kegiatan bunker dengan *Single Propeller Oil Barge (SPOB)*.

(3) Untuk kapal-kapal yang olah gerak sandar di Terminal TPKS, hanya diperbolehkan pada saat kekuatan angin kurang dari 20 (dua puluh) knot dan harus mempertimbangkan aspek keselamatan pelayaran. Apabila melebihi kondisi tersebut, maka pelaksanaan pemanduan dapat ditunda sampai kondisi cuaca membaik serta mempertimbangkan kedalaman kolam Terminal.

(4) Pada saat pelaksanaan pemanduan Nakhoda dan Pandu menggunakan kecakapan pelaut yang baik dan kecepatan aman.

(5) Jarak antara kapal yang sandar harus sesuai ketentuan sebagai berikut :

PANJANG KAPAL (Meter)	JARAK SANDAR KAPAL (Meter)
≤ 100	Minimal 5 (lima)
100 sd 150	Minimal 10 (sepuluh)
150 sd 200	Minimal 15 (lima belas)
≥ 200	Minimal 20 (dua puluh)

(6) Ketentuan kapal yang sandar di Terminal Umum sebagai berikut :
a. Kapal yang sandar di Terminal TPKS dengan kedalaman kolam - 12 meter LWS, dengan maksimal draft = 10 meter pada pasang terendah.
b. Kapal yang sandar di Terminal Samudera dengan kedalaman kolam - 11 meter LWS, dengan maksimal draft = 10 meter pada pasang terendah.
c. Kapal yang sandar di Terminal Nusantara dengan kedalaman kolam - 10 meter LWS, dengan maksimal draft = 9 meter pada pasang terendah.
d. Kapal yang sandar di Jetty / PLTU dengan kedalaman kolam - 6 meter LWS, dengan maksimal draft kapal = 5 meter pada pasang terendah.
e. Kapal yang sandar di Terminal CPO maximal panjang kapal (length over all / LOA) = 95 meter maximal Draft = 6,5 Meter
f. Kapal yang sandar di Terminal Curah Cair maximal LOA 150 meter dan maximal Draft = 9 Meter.
g. Kapal yang sandar di Terminal Pelabuhan Dalam maximal LOA 150 meter dan maximal Draft = 7 Meter

(7) Ketentuan kapal yang sandar di Terminal TUKS sebagai berikut :
a. Kapal yang sandar di OPSICO maximal LOA = 200 meter dan maximal Draft = 8 Meter
b. Kapal yang sandar di PT. Dwimatama Multikarsa maximal LOA = 135 meter dan maximal Draft = 6 Meter
c. Kapal yang sandar di PT. Sriboga Flourmills maximal LOA = 200 meter dan maximal Draft = 8,5 Meter
d. Kapal yang sandar di SBM Pertamina maximal LOA = 200 meter ,dan maximal Draft = 12Meter

(8) Kapal – kapal yang akan sandar tetap harus memperhatikan kedalaman alur pelayaran.

(9) Kapal-kapal yang akan sandar / lepas dari dermaga tidak boleh menggerakkan baling-baling pada jarak kurang dari 10 (sepuluh) meter dari dermaga.

(10) Apabila Nakhoda meminta pandu untuk mengambil alih komando olah gerak kapal, maka pandu melaksanakan tugas pemanduan kapal keluar, dan tanggungjawab tetap pada Nakhoda. Namun apabila tidak menyerahkan komando, maka pandu tetap harus memberikan petunjuk dan saran mengenai hal-hal yang diperlukan untuk keselamatan dan keamanan olah gerak kapal dan lingkungannya.

(11) Setiap kapal yang melakukan olah gerak kapal sandar / lepas sandar, wajib di *assist* oleh kapal tunda.

(12) Penyandaran kapal dilarang *over stage*,kecuali dalam keadaan luar biasa, dan wajib mendapat persetujuan dari Kantor KSOP.

1.d

To revise the procedure of pilotage service with respect to the IMO Resolutions A.960 (23) and Contains

Recommendation	Jawaban
The contingency plan and emergency situations	Surat Keputusan KSOP Pelabuhan kelas I Tanjung Emas Nomor KP.006/03/19/KSOP.Tg Emas-19 tentang sistem dan prosedur pemanduan dan penundaan kapal di pelabuhan Tanjung Emas Semarang (Pasal 11 hal 17)

PEMANDUAN DAN PENUNDAAN KAPAL DALAM KEADAAN DARURAT

Pasal 11

(1) Berita darurat menyangkut keselamatan pelayaran yang disampaikan oleh siapapun segera dilaporkan keStasiun Radio Pantai / VTS Semarang ataupun Radio Pandu, serta Kantor KSOP / UPP setempat.

(2) Padis pemanduan melakukan komunikasi dan koordinasi kepada Asman Pelayanan Kapal dan Kantor KSOP, selanjutnya Padis pemanduan memerintahkan pandu jaga untuk melakukan pemanduan sesuai perintah.

(3) Perwira Jaga Kantor KSOP / UPP setempat yang menerima laporan berita darurat dari kapal, segera melaporkan kepada Kepala Kantor KSOP / UPP untuk mengambil langkah-langkah penanggulangan keadaan darurat.

(4) Kantor KSOP mengirimkan laporan kecelakaan kapal dimaksud kepada Puskodalops Ditjen hubla;

(5) Pandu harus berkoordinasi dengan kapal lain yang dipandu, maupun yang tidak dipandu, serta dengan menara kontrol / stasiun pandu / *vessel traffic service (VTS)* untuk ketertiban, kelancaran dan keselamatan lalu lintas kapal.

(6) Sesegera mungkin melaporkan bilamana terjadi kecelakaan kapal di dalam atau diluar kapal kepada pengawas pemanduan dan ikut aktif ambil bagian penanganannya sebatas kewenangan yang dimilikinya.

(7) Menerima dan menindak lanjuti laporan pandu lainnya tentang kecelakaan atau bahaya apapun yang terjadi;

(8) Memberikan bimbingan kepada calon pandu dan sesama pengenalan alur pelayaran setempat.

1.e

To revise the procedure of pilotage service with respect to the IMO Resolutions A.960 (23) and Contains

Recommendation	Jawaban
The use of a single languange (marine english)	- Standard Marine Communication Phrases (SMCP) - Terlampir pelatihan english Terlampir video marine English conversation pada saat proses berthing

1.f

To revise the procedure of pilotage service with respect to the IMO Resolutions A.960 (23) and Contains

Recommendation	Jawaban
Minimum navigable speed in the prevating condition	Prosedur Mutu Pemanduan dan penundaaan kapal Pelabuhan Tanjung Emas tanggal 27/08/19 (halaman 12)

5.3.8. Kecepatan kapal di alur dengan *safe speed* / kecepatan aman.

5.3.8.1. Kapal bergerak mendekati area putar (*turning basin*) atau masuk alu dengan kecepatan aman kurang lebih speed 3 knot dan speed netral ata 0 (Nol) pada saat akan melakukan proses putar kiri dan mempertahanka jarak aman kapal dengan kapal kapal lain yang sandar di dermaga.

5.3.8.2. Tali *assist tug* sudah harus di ikat ke kapal dan diatur sedemikian rup sehingga gerakan assist tug untuk menarik/mendorong tidak terganggu.

5.3.8.3. Area putar kapal berada pada jarak 1,5 *cable* atau sekitar 400 meter da dermaga yang akan disandari untuk menghindari kapal *drifting* karen pengaruh air pasang / air surut yang kuat.

5.3.8.4. Kapal melakukan olah gerak untuk membuat posisi kapal paralel/sejajar dengan dermaga dengan menggunakan bantuan *assist* tug dan tetap koordinasi dengan petugas tambatan / petugas kepil di dermaga.

5.3.8.5. Pada jarak sekitar 60 s/d 70 meter, kapal harus sudah sejajar/paralel dengan dermaga. Kecepatan lateral kapal mendekati kapal yang akan disandarkan maksimal 0,4 knot. *Main engine* kapal digunakan seperlunya untuk mempertahankan posisi kapal agar tidak maju/bergerak mundur dari posisi yang diinginkan. *Assist tug* posisinya tegak lurus dengan kapal dan harus mempertahankan kecepatan lateral kapal 0,4 knot;

5.3.8.6. Pada jarak 30 meter dengan kapal yang akan disandarkan, kecepatan lateral kapal dikurangi menjadi 0,2 knot – 0,1 knot.

5.3.9. Pada jarak 15 meter dengan dermaga yang akan disandarkan, kecepatan lateral kapal dikurangi menjadi 0,1 knot sampai dengan kapal menyentuh *floating fender*;

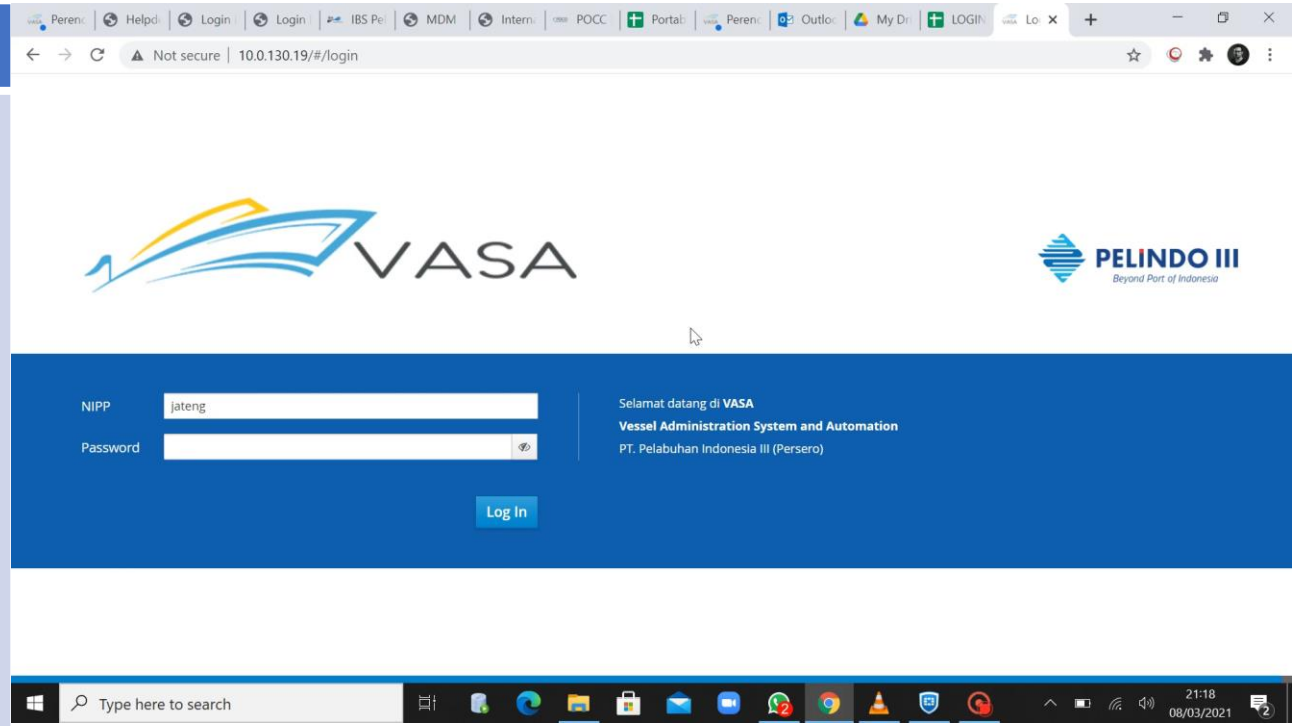
5.3.10. Petugas kepil bersiap menerima tali-tali tross/*spring/head line* dari kapal yang akan disandarkan untuk diikatkan pada bolder dermaga.

5.3.11. Pada jarak jangkauan untuk melempar tali, segera kirim tali buangan untuk mengirim tali tross depan dan tali tross belakang dan posisi *assist tug* tetap tegak lurus untuk mempertahankan posisi kapal tetap sejajar/paralel dengan dermaga yang disandarin untuk menahan benturan sehingga kapal bisa merapat dengan aman. *Main Engine* atau M\E kapal digunakan untuk mempertahankan posisi kapal agar tidak bergerak maju/mundur.

2

To Improve the vasa system , considering the ministerial Regulations of the Minister of Transport no 57 year of 2015 on Pilotage and Towing

Recommendation	Jawaban
To Improve the vasa system , considering the ministerial Regulations of the Minister of Transport no 57 year of 2015 on Pilotage and Towing	Sudah diakomodir Kantor Pusat Terlampir video



3

To Ensure that the Pilot on Duty to witness the succesful of main engine and steering Gear tests (astern and ahead) for all assisted vessels before entering and leaving the port

Recommendation	Jawaban
To Ensure that the Pilot on Duty to witness the succesful of main engine and steering Gear tests (astern and ahead) for all assisted vessels before entering and leaving the port	Surat Keputusan KSOP Pelabuhan kelas I Tanjung Emas Nomor KP.006/03/19/KSOP. Tg Emas-19 tentang sistem dan prosedur pemanduan dan penundaan kapal di pelabuhan Tanjung Emas Semarang (Bab III Pasal 6 Ayat 5, hal 10)

(5) Setelah berada di atas kapal, Pandudan Nakhoda segera melakukan pertukaran informasi (*Pilot Master Information Exchange*) antara lain:

a. Informasi yang diberikan Nakhoda kepada Pandu meliputi :

i. *Ships Particulars;*
ii. Karakteristik sistema kemudi dan sudah melaksanakan *steering tested;*
iii. Karakteristik mesin dan sudah melaksanakan *engine tested;*
iv. *Winch standby* dan siap dioperasikan;
v. *Emergency towing lines* siap muka belakang;
vi. *Bow truster* dalam kondisi *standby* dan siap digunakan;
vii. Perwira *standby* masing-masing muka belakang;
viii. Data uji *turning circle*, zig zag manuvering, *crash stopping* terdapat dianjungan terlampir dan disampaikan;
ix. Karakteristik olah gerak kapal;
x. Alat navigasi;
xi. Peta yang digunakan;
xii. Tipe jangkar;

b. Informasi yang diberikan Pandu kepada Nakhoda meliputi :

i. Tipe alur pelayaran;
ii. Kondisi lalu lintas kapal;
iii. Keadaan unsur cuaca setempat meliputi kondisi cuaca, kecepatan angin, prakiraan arus dan prakiraan tinggi gelombang;
iv. Jumlah tunda yang akan digunakan;
v. Kekuatan tali;
vi. Memberikan informasi tentang kekuatan *bollard pul;*
vii. Ploting sandar dan waktu sandar;
viii. Maksimal draf yang diijinkan;
ix. Minimal UKC yang diijinkan;

LAMPIRAN

Lampiran BRM Pandu Tg Emas

KEMENTERIAN PERHUBUNGAN REPUBLIK INDONESIA
DIREKTORAT JENDERAL PERHUBUNGAN LAUT

MINISTRY OF TRANSPORTATION OF THE REPUBLIC OF INDONESIA
DIRECTORATE GENERAL OF SEA TRANSPORTATION

SERTIFIKAT KETERAMPILAN
CERTIFICATE OF PROFICIENCY

Nomor Seri / Serial No.: CP 1175004
Nomor Sertifikat / Certificate No.: 6200148357230515

Dengan ini dinyatakan bahwa
This is to certify that

Nama
Name
[redacted]
Tempat dan tanggal lahir
Place and date of birth

telah menyelesaikan pelatihan dan lulus evaluasi :
has completed approved training and passed the assessment of

BRIDGE RESOURCE MANAGEMENT

yang dilaksanakan oleh : POLTEKPEL Surabaya
which has held by
di : SURABAYA
at : 19 November 2015 to 25 November 2015

Sesuai ketentuan STCW 1978 beserta dengan amandemennya, Peraturan : Section A-VIII, Section B-VIII, Section B-VI/2 STCW 2010
In accordance with the provisions of STCW 1978 as amended, Regulation
yang telah mendapat pengesahan dari Direktorat Jenderal Perhubungan Laut selaku Administrasi.
which has been approved by the Directorate General of Sea Transportation as Administration.

SURABAYA, 26 November 2015
An. Direktur Jenderal Perhubungan Laut
For Director General of Sea Transportation
Ketua/Direktur/Kepala
Principal/Director/Head

Tandatangan Pemilik
Signature of the Holder
[redacted]

Capt. MARIHOT SIMANJUNTAK, MM

KEMENTERIAN PERHUBUNGAN REPUBLIK INDONESIA
DIREKTORAT JENDERAL PERHUBUNGAN LAUT

MINISTRY OF TRANSPORTATION OF THE REPUBLIC OF INDONESIA
DIRECTORATE GENERAL OF SEA TRANSPORTATION

SERTIFIKAT KETERAMPILAN
CERTIFICATE OF PROFICIENCY

Nomor Seri / Serial No.: CP 1252870
Nomor Sertifikat / Certificate No.: 6200406455230516

Dengan ini dinyatakan bahwa
This is to certify that

Nama
Name
[redacted]
Tempat dan tanggal lahir
Place and date of birth

telah menyelesaikan pelatihan dan lulus evaluasi :
has completed approved training and passed the assessment of

BRIDGE RESOURCE MANAGEMENT - Revalidation

yang dilaksanakan oleh : POLTEKPEL Surabaya
which has held by
di : SURABAYA
at : 25 June 2013 to 27 June 2013

Sesuai ketentuan STCW 1978 beserta dengan amandemennya, Peraturan : Section A-VIII, Section B-VIII, Section B-VI/2 STCW 2010
In accordance with the provisions of STCW 1978 as amended, Regulation
yang telah mendapat pengesahan dari Direktorat Jenderal Perhubungan Laut selaku Administrasi.
which has been approved by the Directorate General of Sea Transportation as Administration.

SURABAYA, 28 January 2016
An. Direktur Jenderal Perhubungan Laut
For Director General of Sea Transportation
Ketua/Direktur/Kepala
Principal/Director/Head

Tandatangan Pemilik
Signature of the Holder
[redacted]

Capt. MARIHOT SIMANJUNTAK, MM

KEMENTERIAN PERHUBUNGAN REPUBLIK INDONESIA
DIREKTORAT JENDERAL PERHUBUNGAN LAUT

MINISTRY OF TRANSPORTATION OF THE REPUBLIC OF INDONESIA
DIRECTORATE GENERAL OF SEA TRANSPORTATION

SERTIFIKAT KETERAMPILAN
CERTIFICATE OF PROFICIENCY

Nomor Seri / Serial No.: CP 1252875
Nomor Sertifikat / Certificate No.: 6200418900230516

Dengan ini dinyatakan bahwa
This is to certify that

Nama
Name
[redacted]
Tempat dan tanggal lahir
Place and date of birth

telah menyelesaikan pelatihan dan lulus evaluasi :
has completed approved training and passed the assessment of

BRIDGE RESOURCE MANAGEMENT - Revalidation

yang dilaksanakan oleh : POLTEKPEL Surabaya
which has held by
di : SURABAYA
at : 03 July 2012 to 05 July 2012

Sesuai ketentuan STCW 1978 beserta dengan amandemennya, Peraturan : Section A-VIII, Section B-VIII, Section B-VI/2 STCW 2010
In accordance with the provisions of STCW 1978 as amended, Regulation
yang telah mendapat pengesahan dari Direktorat Jenderal Perhubungan Laut selaku Administrasi.
which has been approved by the Directorate General of Sea Transportation as Administration.

SURABAYA, 28 January 2016
An. Direktur Jenderal Perhubungan Laut
For Director General of Sea Transportation
Ketua/Direktur/Kepala
Principal/Director/Head

Tandatangan Pemilik
Signature of the Holder
[redacted]

Capt. MARIHOT SIMANJUNTAK, MM

KEMENTERIAN PERHUBUNGAN REPUBLIK INDONESIA
DIREKTORAT JENDERAL PERHUBUNGAN LAUT

MINISTRY OF TRANSPORTATION OF THE REPUBLIC OF INDONESIA
DIRECTORATE GENERAL OF SEA TRANSPORTATION

SERTIFIKAT KETERAMPILAN
CERTIFICATE OF PROFICIENCY

Nomor Seri / Serial No.: CP 1045326
Nomor Sertifikat / Certificate No.: 6200008539230515

Dengan ini dinyatakan bahwa
This is to certify that

Nama
Name
[redacted]
Tempat dan tanggal lahir
Place and date of birth

telah menyelesaikan pelatihan dan lulus evaluasi :
has completed approved training and passed the assessment of

BRIDGE RESOURCE MANAGEMENT

yang dilaksanakan oleh : POLTEKPEL Surabaya
which has held by
di : SURABAYA
at : 19 November 2015 to 25 November 2015

Sesuai ketentuan STCW 1978 beserta dengan amandemennya, Peraturan : Section A-VIII, Section B-VIII, Section B-VI/2 STCW 2010
In accordance with the provisions of STCW 1978 as amended, Regulation
yang telah mendapat pengesahan dari Direktorat Jenderal Perhubungan Laut selaku Administrasi.
which has been approved by the Directorate General of Sea Transportation as Administration.

SURABAYA, 26 November 2015
An. Direktur Jenderal Perhubungan Laut
For Director General of Sea Transportation
Ketua/Direktur/Kepala
Principal/Director/Head

Tandatangan Pemilik
Signature of the Holder
[redacted]

Capt. MARIHOT SIMANJUNTAK, MM

KEMENTERIAN PERHUBUNGAN REPUBLIK INDONESIA
DIREKTORAT JENDERAL PERHUBUNGAN LAUT

MINISTRY OF TRANSPORTATION OF THE REPUBLIC OF INDONESIA
DIRECTORATE GENERAL OF SEA TRANSPORTATION

SERTIFIKAT KETERAMPILAN
CERTIFICATE OF PROFICIENCY

Nomor Seri / Serial No.: CP 0317598
Nomor Sertifikat / Certificate No.: 6201011379230314

Dengan ini dinyatakan bahwa
This is to certify that

Nama
Name
[redacted]
Tempat dan tanggal lahir
Place and date of birth

telah menyelesaikan pelatihan dan lulus evaluasi :
has completed approved training and passed the assessment of

BRIDGE RESOURCE MANAGEMENT

yang dilaksanakan oleh : PIP Semarang
which has held by
di : SEMARANG
at : 09 June 2014 to 11 June 2014

Sesuai ketentuan STCW 1978 beserta dengan amandemennya, Peraturan : Section A-VIII, Section B-VIII, Section B-VI/2 STCW 2010
In accordance with the provisions of STCW 1978 as amended, Regulation
yang telah mendapat pengesahan dari Direktorat Jenderal Perhubungan Laut selaku Administrasi.
which has been approved by the Directorate General of Sea Transportation as Administration.

SEMARANG, 01 November 2014
An. Direktur Jenderal Perhubungan Laut
For Director General of Sea Transportation
Ketua/Direktur/Kepala
Principal/Director/Head

Tandatangan Pemilik
Signature of the Holder
[redacted]

M. Ghafar Djohansyah, ST, M.Mar.E

KEMENTERIAN PERHUBUNGAN REPUBLIK INDONESIA
DIREKTORAT JENDERAL PERHUBUNGAN LAUT

MINISTRY OF TRANSPORTATION OF THE REPUBLIC OF INDONESIA
DIRECTORATE GENERAL OF SEA TRANSPORTATION

SERTIFIKAT KETERAMPILAN
CERTIFICATE OF PROFICIENCY

Nomor Seri / Serial No.: CP 1172572
Nomor Sertifikat / Certificate No.: 6201019998230515

Dengan ini dinyatakan bahwa
This is to certify that

Nama
Name
[redacted]
Tempat dan tanggal lahir
Place and date of birth

telah menyelesaikan pelatihan dan lulus evaluasi :
has completed approved training and passed the assessment of

BRIDGE RESOURCE MANAGEMENT

yang dilaksanakan oleh : POLTEKPEL Surabaya
which has held by
di : SURABAYA
at : 19 November 2015 to 25 November 2015

Sesuai ketentuan STCW 1978 beserta dengan amandemennya, Peraturan : Section A-VIII, Section B-VIII, Section B-VI/2 STCW 2010
In accordance with the provisions of STCW 1978 as amended, Regulation
yang telah mendapat pengesahan dari Direktorat Jenderal Perhubungan Laut selaku Administrasi.
which has been approved by the Directorate General of Sea Transportation as Administration.

SURABAYA, 26 November 2015
An. Direktur Jenderal Perhubungan Laut
For Director General of Sea Transportation
Ketua/Direktur/Kepala
Principal/Director/Head

Tandatangan Pemilik
Signature of the Holder
[redacted]

Capt. MARIHOT SIMANJUNTAK, MM

KEMENTERIAN PERHUBUNGAN REPUBLIK INDONESIA
DIREKTORAT JENDERAL PERHUBUNGAN LAUT

MINISTRY OF TRANSPORTATION OF THE REPUBLIC OF INDONESIA
DIRECTORATE GENERAL OF SEA TRANSPORTATION

SERTIFIKAT KETERAMPILAN
CERTIFICATE OF PROFICIENCY

Nomor Seri / Serial No.: CP 1174167
Nomor Sertifikat / Certificate No.: 6200090231230515

Dengan ini dinyatakan bahwa
This is to certify that

Nama
Name
[redacted]
Tempat dan tanggal lahir
Place and date of birth

telah menyelesaikan pelatihan dan lulus evaluasi :
has completed approved training and passed the assessment of

BRIDGE RESOURCE MANAGEMENT

yang dilaksanakan oleh : POLTEKPEL Surabaya
which has held by
di : SURABAYA
at : 19 November 2015 to 25 November 2015

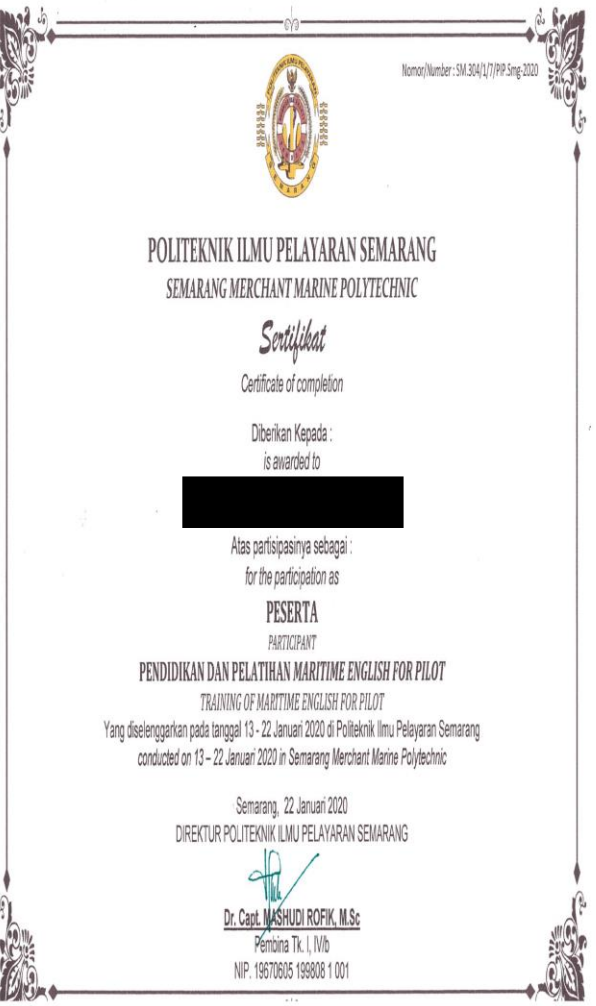
Sesuai ketentuan STCW 1978 beserta dengan amandemennya, Peraturan : Section A-VIII, Section B-VIII, Section B-VI/2 STCW 2010
In accordance with the provisions of STCW 1978 as amended, Regulation
yang telah mendapat pengesahan dari Direktorat Jenderal Perhubungan Laut selaku Administrasi.
which has been approved by the Directorate General of Sea Transportation as Administration.

SURABAYA, 26 November 2015
An. Direktur Jenderal Perhubungan Laut
For Director General of Sea Transportation
Ketua/Direktur/Kepala
Principal/Director/Head

Tandatangan Pemilik
Signature of the Holder
[redacted]

Capt. MARIHOT SIMANJUNTAK, MM

Lampiran Maritime English For Pilot



Nomor/Number : SM.304/1/7/PIP.Smg-2020

POLITEKNIK ILMU PELAYARAN SEMARANG
SEMARANG MERCHANT MARINE POLYTECHNIC

Sertifikat
Certificate of completion

Diberikan Kepada :
is awarded to

[redacted]

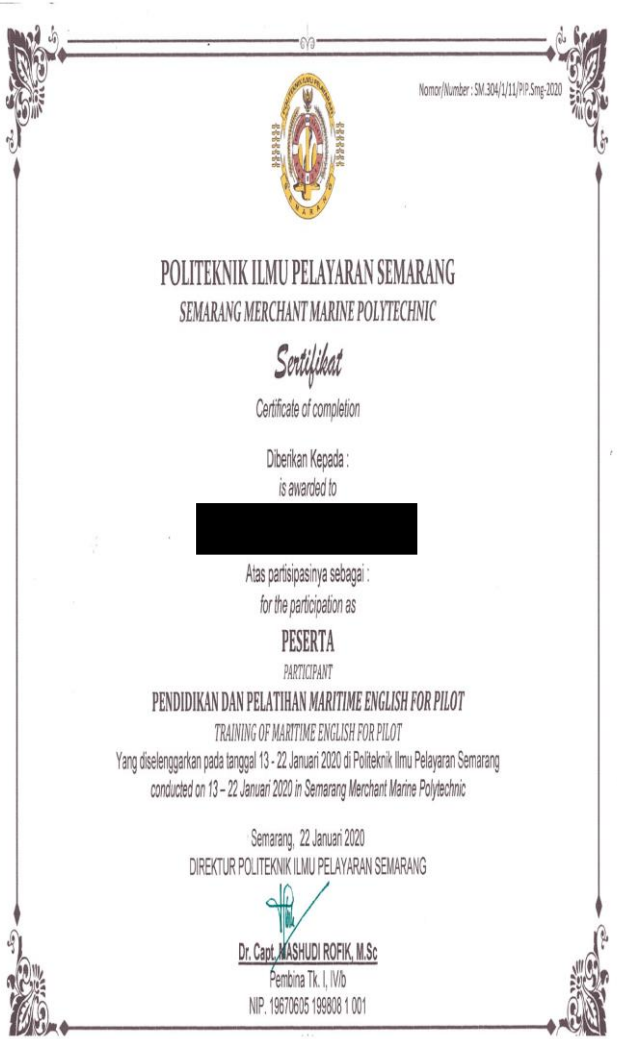
Atas partisipasinya sebagai :
for the participation as

PESERTA
PARTICIPANT

PENDIDIKAN DAN PELATIHAN *MARITIME ENGLISH FOR PILOT*
TRAINING OF MARITIME ENGLISH FOR PILOT
Yang diselenggarkan pada tanggal 13 - 22 Januari 2020 di Politeknik Ilmu Pelayaran Semarang
conducted on 13 – 22 Januari 2020 in Semarang Merchant Marine Polytechnic

Semarang, 22 Januari 2020
DIREKTUR POLITEKNIK ILMU PELAYARAN SEMARANG

Dr. Capt. MASHUDI ROFIK, M.Sc
Pembina Tk. I, IV/b
NIP. 19670605 199808 1 001



Nomor/Number : SM.304/1/11/PIP.Smg-2020

POLITEKNIK ILMU PELAYARAN SEMARANG
SEMARANG MERCHANT MARINE POLYTECHNIC

Sertifikat
Certificate of completion

Diberikan Kepada :
is awarded to

[redacted]

Atas partisipasinya sebagai :
for the participation as

PESERTA
PARTICIPANT

PENDIDIKAN DAN PELATIHAN *MARITIME ENGLISH FOR PILOT*
TRAINING OF MARITIME ENGLISH FOR PILOT
Yang diselenggarkan pada tanggal 13 - 22 Januari 2020 di Politeknik Ilmu Pelayaran Semarang
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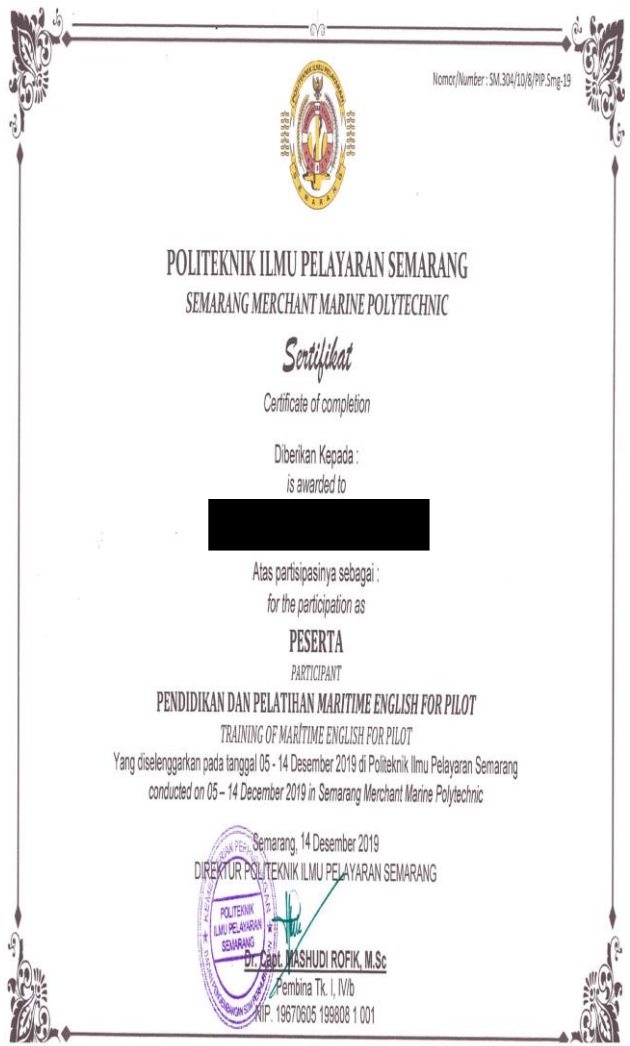
Semarang, 22 Januari 2020
DIREKTUR POLITEKNIK ILMU PELAYARAN SEMARANG

Dr. Capt. MASHUDI ROFIK, M.Sc
Pembina Tk. I, IV/b
NIP. 19670605 199808 1 001



Nomor/Number : SM.304/10/8/PIP.Smg-19

POLITEKNIK ILMU PELAYARAN SEMARANG
SEMARANG MERCHANT MARINE POLYTECHNIC

Sertifikat
Certificate of completion

Diberikan Kepada :
is awarded to

[redacted]

Atas partisipasinya sebagai :
for the participation as

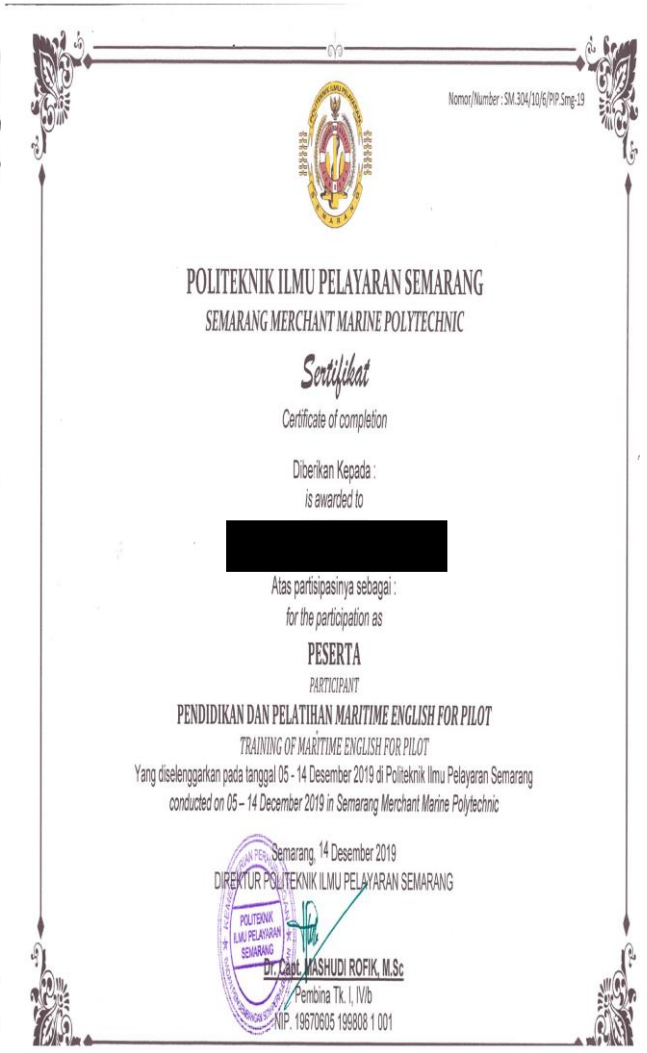
PESERTA
PARTICIPANT

PENDIDIKAN DAN PELATIHAN *MARITIME ENGLISH FOR PILOT*
TRAINING OF MARITIME ENGLISH FOR PILOT
Yang diselenggarkan pada tanggal 05 - 14 Desember 2019 di Politeknik Ilmu Pelayaran Semarang
conducted on 05 – 14 December 2019 in Semarang Merchant Marine Polytechnic

Semarang, 14 Desember 2019
DIREKTUR POLITEKNIK ILMU PELAYARAN SEMARANG

POLITEKNIK ILMU PELAYARAN SEMARANG

Dr. Capt. MASHUDI ROFIK, M.Sc
Pembina Tk. I, IV/b
NIP. 19670605 199808 1 001



Nomor/Number : SM.304/10/6/PIP.Smg-19

POLITEKNIK ILMU PELAYARAN SEMARANG
SEMARANG MERCHANT MARINE POLYTECHNIC

Sertifikat
Certificate of completion

Diberikan Kepada :
is awarded to

[redacted]

Atas partisipasinya sebagai :
for the participation as

PESERTA
PARTICIPANT

PENDIDIKAN DAN PELATIHAN *MARITIME ENGLISH FOR PILOT*
TRAINING OF MARITIME ENGLISH FOR PILOT
Yang diselenggarkan pada tanggal 05 - 14 Desember 2019 di Politeknik Ilmu Pelayaran Semarang
conducted on 05 – 14 December 2019 in Semarang Merchant Marine Polytechnic

Semarang, 14 Desember 2019
DIREKTUR POLITEKNIK ILMU PELAYARAN SEMARANG

POLITEKNIK ILMU PELAYARAN SEMARANG

Dr. Capt. MASHUDI ROFIK, M.Sc
Pembina Tk. I, IV/b
NIP. 19670605 199808 1 001

Lampiran Checklist Pilot Master Information Exchange

PELINDO III
Beyond Port of Indonesia

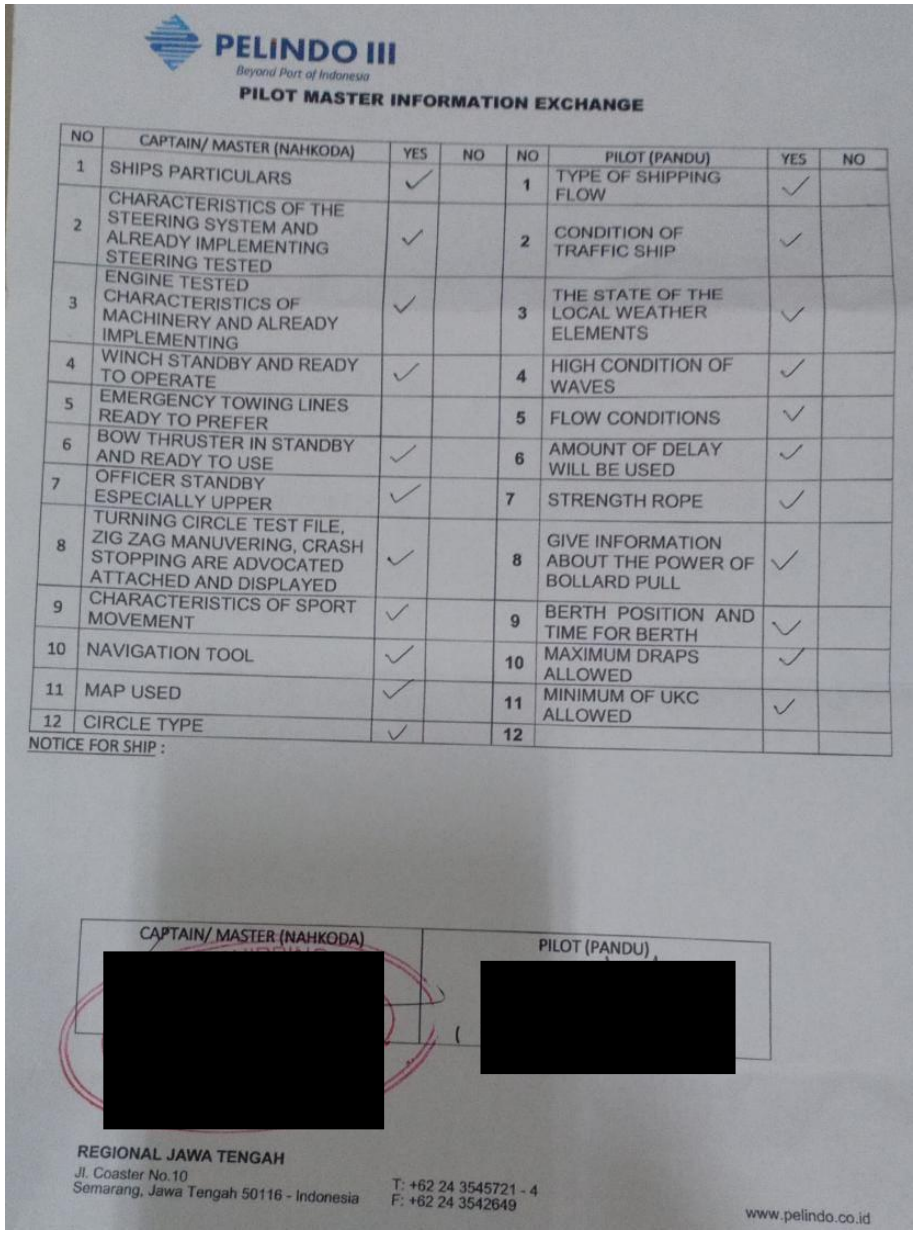
PILOT MASTER INFORMATION EXCHANGE

NO	CAPTAIN/ MASTER (NAHKODA)	YES	NO	NO	PILOT (PANDU)	YES	NO
1	SHIPS PARTICULARS			1	TYPE OF SHIPPING FLOW		
2	CHARACTERISTICS OF THE STEERING SYSTEM AND ALREADY IMPLEMENTING STEERING TESTED			2	CONDITION OF TRAFFIC SHIP		
3	ENGINE TESTED CHARACTERISTICS OF MACHINERY AND ALREADY IMPLEMENTING			3	THE STATE OF THE LOCAL WEATHER ELEMENTS		
4	WINCH STANDBY AND READY TO OPERATE			4	HIGH CONDITION OF WAVES		
5	EMERGENCY TOWING LINES READY TO PREFER			5	FLOW CONDITIONS		
6	BOW THRUSTER IN STANDBY AND READY TO USE			6	AMOUNT OF DELAY WILL BE USED		
7	OFFICER STANDBY ESPECIALLY UPPER			7	STRENGTH ROPE		
8	TURNING CIRCLE TEST FILE, ZIG ZAG MANUVERING, CRASH STOPPING ARE ADVOCATED ATTACHED AND DISPLAYED			8	GIVE INFORMATION ABOUT THE POWER OF BOLLARD PULL		
9	CHARACTERISTICS OF SPORT MOVEMENT			9	BERTH POSITION AND TIME FOR BERTH		
10	NAVIGATION TOOL			10	MAXIMUM DRAPS ALLOWED		
11	MAP USED			11	MINIMUM OF UKC ALLOWED		
12	CIRCLE TYPE			12			

NOTICE FOR SHIP :

CAPTAIN/ MASTER (NAHKODA)	PILOT (PANDU)
( )	( )

REGIONAL JAWA TENGAH
Jl. Coaster No.10
Semarang, Jawa Tengah 50116 - Indonesia
T: +62 24 3545721 - 4
F: +62 24 3542649
www.pelindo.co.id



PELINDO III
Beyond Port of Indonesia

PILOT MASTER INFORMATION EXCHANGE

NO	CAPTAIN/ MASTER (NAHKODA)	YES	NO	NO	PILOT (PANDU)	YES	NO
1	SHIPS PARTICULARS	✓		1	TYPE OF SHIPPING FLOW	✓	
2	CHARACTERISTICS OF THE STEERING SYSTEM AND ALREADY IMPLEMENTING STEERING TESTED	✓		2	CONDITION OF TRAFFIC SHIP	✓	
3	ENGINE TESTED CHARACTERISTICS OF MACHINERY AND ALREADY IMPLEMENTING	✓		3	THE STATE OF THE LOCAL WEATHER ELEMENTS	✓	
4	WINCH STANDBY AND READY TO OPERATE	✓		4	HIGH CONDITION OF WAVES	✓	
5	EMERGENCY TOWING LINES READY TO PREFER			5	FLOW CONDITIONS	✓	
6	BOW THRUSTER IN STANDBY AND READY TO USE	✓		6	AMOUNT OF DELAY WILL BE USED	✓	
7	OFFICER STANDBY ESPECIALLY UPPER	✓		7	STRENGTH ROPE	✓	
8	TURNING CIRCLE TEST FILE, ZIG ZAG MANUVERING, CRASH STOPPING ARE ADVOCATED ATTACHED AND DISPLAYED	✓		8	GIVE INFORMATION ABOUT THE POWER OF BOLLARD PULL	✓	
9	CHARACTERISTICS OF SPORT MOVEMENT	✓		9	BERTH POSITION AND TIME FOR BERTH	✓	
10	NAVIGATION TOOL	✓		10	MAXIMUM DRAPS ALLOWED	✓	
11	MAP USED	✓		11	MINIMUM OF UKC ALLOWED	✓	
12	CIRCLE TYPE	✓		12			

NOTICE FOR SHIP :

CAPTAIN/ MASTER (NAHKODA)	PILOT (PANDU)
[redacted]	([redacted]

REGIONAL JAWA TENGAH
Jl. Coaster No.10
Semarang, Jawa Tengah 50116 - Indonesia
T: +62 24 3545721 - 4
F: +62 24 3542649
www.pelindo.co.id

PELINDO III

PILOT MASTER INFORMATION EXCHANGE
PORT OF TANJUNG EMAS SEMARANG

NAME OF SHIP : SEA OF LUCK

DATE : 10-02-2021

NO	CAPTAIN/ MASTER (NAHKODA)	YES	NO	NO	PILOT (PANDU)	YES	NO
1	SHIPS PARTICULARS	✓		1	CHANNEL AND TRAFFIC CONDITION	✓	
2	CHARACTERISTIC OF THE STERING SYSTEM AND ALREADY TESTED	✓		2	LOCAL WEATHER SITUATION (WIND, WAVE, CURRENT)	✓	
3	ENGINE CHARACTERISTIC AND TESTED	✓		3	BERTHING PLAN	✓	
4	WINCH ABLE TO OPERATE	✓		4	MAXIMUM DRAFT ALLOWED	✓	
5	EMERGENCY TOWING LINES AVAILABLE	✓		5	TURNING BASIN EXPLAINED	✓	
6	BOW THRUSTER	✓		6	SAFE SPEED	✓	
7	OFFICER STANDBY FWD AND AFT	✓		7	VHF CHANNEL COMMUNICATION	✓	
8	MANUVERING CHARASTERISTIC INFORMED	✓		8	TERMINAL AND MOORING READINESS	✓	
9	ANCHORE STANDBY TO DROP ANYTIME	✓		9	SOP PORT AUTHORITY EXPLAINED	✓	
10	NAVIGATION EQUIPMENT TESTED	✓		10	TUG USED AND HP (..... UNIT, ... HP)	✓	
11	MAP USED	✓				✓	

NOTE:

Berthing / Unberthing/ Shifting

SHIP MASTER (NAHKODA)	PILOT (PANDU)
([redacted])	([redacted])

PELINDO III

PILOT MASTER INFORMATION EXCHANGE
PORT OF TANJUNG EMAS SEMARANG

NAME OF SHIP : CTP FORTUNE

DATE : 10 MARET 2021

NO	CAPTAIN/ MASTER (NAHKODA)	YES	NO	NO	PILOT (PANDU)	YES	NO
1	SHIPS PARTICULARS	✓		1	CHANNEL AND TRAFFIC CONDITION	✓	
2	CHARACTERISTIC OF THE STERING SYSTEM AND ALREADY TESTED	✓		2	LOCAL WEATHER SITUATION (WIND, WAVE, CURRENT)	✓	
3	ENGINE CHARACTERISTIC AND TESTED	✓		3	BERTHING PLAN	✓	
4	WINCH ABLE TO OPERATE	✓		4	MAXIMUM DRAFT ALLOWED	✓	
5	EMERGENCY TOWING LINES AVAILABLE	✓		5	TURNING BASIN EXPLAINED	✓	
6	BOW THRUSTER	✓		6	SAFE SPEED	✓	
7	OFFICER STANDBY FWD AND AFT	✓		7	VHF CHANNEL COMMUNICATION	✓	
8	MANUVERING CHARASTERISTIC INFORMED	✓		8	TERMINAL AND MOORING READINESS	✓	
9	ANCHORE STANDBY TO DROP ANYTIME	✓		9	SOP PORT AUTHORITY EXPLAINED	✓	
10	NAVIGATION EQUIPMENT TESTED	✓		10	TUG USED AND HP (..2.. UNIT, 6000 HP)	✓	
11	MAP USED	✓					

NOTE:

Berthing / Unberthing/ Shifting

SHIP MASTER (NAHKODA)	PILOT (PANDU)
([redacted])	([redacted])

CLOSING RECOMMENDATIONS OF PT PELINDO MARINE SERVICE

Closing Recommendation
PT Pelindo Marine Service

Maret 2021

Recommendation PT Pelindo Marine Service

IV.2.3. PT PELINDO MARINE SERVICE

1. To revise the procedure of towing service by considering:
   a. the details of the coordination amongst the Pilot and tug boats' crew;
   b. the berthing method and turning point;
   c. the contingency plan and emergency situations;
   d. the use of a single language (marine English);
   e. the safe speed of assisted vessel associated with the type, size and minimum navigable speed in the prevailing condition.

2. To ensure the evaluation of work for the tug boats' crew in regards the safety at work is effective.

Until the final report is issued, the KNKT had not received safety actions yet following the recommendations.

Status: Open

IV.3. VICTORIA OCEANWAY LTD. (MANAGING OWNER) AND OSIER HOLDING S.A. (REGISTERED OWNER)

1. To ensure that the Master always has the rights to:
   a. take control of the ship;
   b. refuse the assistance in case of an unsafe condition.

1

To revise the procedure of towing service by considering:

Recommendation	Jawaban
a. The details of the coordination amongst the pilot and tug boat's crew; b. The berthing method and turning point; c. The Contingency plan and emergency situations; d. The use of a single language (marine english); e. The safe speed of assisted vessel associated with the type, size and minimum navigable speed in the prevailing condition;	Sudah dilakukan revisi pada klausul-klausul sesuai rekomendasi dari KNKT dalam sistem dan prosedur berikut : (bukti dokumen terlampir) P-OP-01 (Prosedur Pengeoprasian Kapal Tunda dan Pandu) P-SMMR-22 (Prosedur Menghadapi Keadaan Darurat di Kapal)

2

To ensure the evaluation of work for the tug boat's crew in regards the safety at work is effective

Recommendation	Jawaban
To ensure the evaluation of work for the tug boat's crew in regards the safety at work is effective	Telah dilaksanakan pemantauan dan evaluasi terhadap seluruh kru kapal oleh PT. Pelindo Marine Service dengan rincian kegiatan yakni sebagai berikut : (bukti berita acara terlampir) 1. Safety patrol rutin seluruh kapal, meliputi pengecekan peralatan keselamatan, peralatan navigasi, peralatan komunikasi dan dokumen kapal; 2. Pelaksanaan drill tanggap darurat kapal; 3. Sosialisasi kebijakan sistem manajemen K3; 4. Safety meeting rutin bulanan; 5. Pemantauan lingkungan di atas kapal; 6. Audit internal tahunan di kapal.

LAMPIRAN

PT. PELINDO MARINE service

PROSEDUR
PENGOPERASIAN KAPAL TUNDA DAN PANDU

NO DOKUMEN	:	**P - OP - 01**
STATUS DOKUMEN	:	**COPY NO :**
NOMOR REVISI	:	**03**
TANGGAL EFEKTIF	:	**10 Februari 2021**

DIBUAT OLEH :	DIPERIKSA OLEH :	DISETUJUI OLEH :
[redacted]	[redacted]	[redacted]
Senior Manajer Operasi	Senior Manajer Sistem Manajemen dan Manajemen Risiko	Direktur Komersial, Operasi dan Teknik
Tanggal	Tanggal	Tanggal

DAFTAR DISTRIBUSI

NO.	PEMEGANG INFORMASI TERDOKUMENTASI	STATUS INFORMASI TERDOKUMENTASI	NOMOR SALINAN
1.	Direktur Utama	TERKENDALI	01
2.	Direktur Komersial, Operasi dan Teknik	TERKENDALI	02
3.	Direktur Keuangan, SDM dan Umum	TERKENDALI	03
4.	Manajemen Representatif	MASTER	04
5.	Senior Manajer SDM dan Umum	TERKENDALI	05
6.	Senior Manajer Komersial	TERKENDALI	06
7.	Senior Manajer Operasi	TERKENDALI	07
8.	Senior Manajer Teknik	TERKENDALI	08
9.	Senior Manajer Keuangan	TERKENDALI	09
10.	Senior Manajer Sistem Manajemen dan Manajemen Risiko	TERKENDALI	10
11.	Manajer Pengadaan Barang dan Jasa	TERKENDALI	11
12.	Kepala Satuan Pengawasan Intern	TERKENDALI	12
13.	Manajer Teknologi Informasi	TERKENDALI	13
14.	Sekretaris Perusahaan	TERKENDALI	14

DAFTAR STATUS REVISI DAN PERSETUJUAN

N0	TGL PERUBAHAN	ISI PERUBAHAN	ALASAN	DIREVISI OLEH
1	01/11/2018	Penyesuaian Nama Departemen dengan STO yang Baru	Perubahan Struktur Organisasi Perusahaan	MR
2	10/02/2020	Penambahan Refrensi SHMS ISO 45001:2018	Perubahan dari OHSAS 18001:2007 ke SHSM ISO 45001:2018	MR
3	08/12/2020	Penambahan keterangan terkait lokasi dan jenis APD yang dipakai pada klausul 5.1.2.2. : 1. Anjungan : Wearpack, safety shoes dan tanpa safety helmet; 2. Kamar mesin : Wearpack, safety shoes, safety helmet dan earplug/earmuff; 3. Main deck : Wearpack, safety shoes, safety helmet, kacamata, life jacket/life vest dan sarung tangan Kecuali ke 3 (tiga) area tersebut diatas berpakaian bebas, rapi dan sopan	Penambahan keterangan detail	Senior Manajer Operasi
4	02/01/2021	Penambahan detail APD wearpack untuk crew kapal pandu pada klausul 5.2.3	Penambahan keterangan detail	Senior Manajer Operasi
5	02/01/2021	Penambahan sub klausul 5.2.6.1 terkait teknis dan jenis kapal pandu yang melakukan pelayanan penjemputan petugas pandu, disertai dengan skala beaufort	Pertimbangan risiko keselamatan dan kesehatan kerja crew kapal pandu	Senior Manajer Operasi

1. TUJUAN

Prosedur ini dibuat sebagai pedoman pelaksanaan pengoperasian kapal tunda dan pandu.

2. RUANG LINGKUP

Prosedur ini mencakup tata cara pengoperasian kapal tunda milik (SRP dan Fixed Propeller) dan kapal pandu (Water Jet dan Fixed Propeller) milik PT Pelindo Marine Service.

3. DEFINISI

3.1. **Awak Kapal** adalah orang yang bekerja atau dipekerjakan di atas kapal oleh pemilik atau operator kapal untuk melakukan tugas di atas kapal sesuai dengan jabatannya yang tercantum dalam buku sijil.

3.2. **Journal/Logbook (jurnal/buku harian kapal)** adalah buku yang berisi catatan harian kegiatan kerja/operasional, peristiwa atau kejadian-kejadian atau suatu kondisi yang penting lainnya (misalnya : kecelakaan, gangguan atau kerusakan) yang terdiri bagian kegiatan dek dan mesin.

3.3. **Kapal** adalah kendaraan air dengan bentuk dan jenis apapun, yang digerakkan dengan tenaga mekanik, tenaga angin atau ditunda, termasuk kendaraan yang berdaya dukung dinamis, kendaraan di bawah air, serta alat apung dan bangunan terapung yang tidak berpindah-pindah.

3.4. **Kapal Pandu** adalah sarana transportasi laut bagi petugas pandu untuk naik/turun ke/dari kapal yang dipandu dalam berolah-gerak di perairan wajib pandu, perairan pandu luar biasa dan perairan di luar perairan wajib pandu saat masuk/keluar pelabuhan atau sandar dan lepas ke/dari dermaga/tambatan.

3.5. **Kapal Tunda** adalah jenis kapal khusus yang di gunakan untuk menarik atau mendorong kapal di pelabuhan, laut lepas atau melalui sungai. Kapal ini digunakan pula untuk menarik tongkang, kapal rusak dan peralatan lainnya dan memiliki tenaga yang besar bila dibandingkan dengan ukurannya.

3.6. **Mesin Induk** adalah mesin utama yang digunakan sebagai penggerak sistem propulsi.

3.7. **Nakhoda (Captain/Master)** adalah Awak Kapal yang ditunjukoleh Pemilik atau Perusahaan menjadi Pimpinan Umum di atas Kapal dan mempunyai wewenang serta tanggung jawab terten tusesuai Peraturan Perundang-undangan yang berlaku.

4. REFERENSI

4.1. Undang – Undang Nomor 17 Tahun 2008 tentang Pelayaran
4.2. Peraturan Pemerintah Nomor 7 Tahun 2000 tentang Kepelautan
4.3. Peraturan Pemerintah Nomor 61 Tahun 2009 tentang Kepelabuhanan
4.4. Peraturan Pemerintah Republik Indonesia Nomor 5 Tahun 2010 Tentang Kenavigasian
4.5. Peraturan Menteri Perhubungan Nomor PM 53 Tahun 2011 Tentang Pemanduan
4.6. SOLAS Chapter V Safety of navigation
4.7. Peraturan Pemerintah No.50 Tahun 2012 tentang Sistem Manajemen Keselamatan Dan Kesehatan Kerja
4.8. Standar Internasional ISO 9001 : 2015 Klausul 8.2
4.9. Standar internasional ISO 14001 : 2015 Klausul 8.1
4.10. Standar Internasional SHMS ISO 45001 : 2018 Klausul 8.1

5. URAIAN PROSEDUR

5.1. Pengoperasian Kapal Tunda

5.1.1. Persiapan sebelum pelayanan penundaan

5.1.1.1. Sebelum melakukan pengoperasian terhadap kapal Tunda, nahkoda harus memastikan hal - hal sebagai berikut :

- Setiap Nakhoda kapal wajib memahami persyaratan persyaratan terkait dengan kontrak kerjasama antara PT. Pelindo Marine Service dengan pelanggan
- Nahkoda harus memahami risiko-risiko mutu, lingkungan dan K3 selama kegiatan pengoperasian Kapal Tunda
- Nakhoda kapal perlu memastikan dan mengetahui bahwa status kapal dan seruhuh awak memenuhi persyaratan dan peraturan perundangan yang berlaku sebelum melakukan kegiatan penundaan
- Nakhoda perlu memastikan bahwa kapal dalam keadaan baik dan telah mendapatkan pemeliharaan / Maintenance sesuai dengan jadwal pemeliharaan
- Memahami sistem komunikasi dengan pelanggan serta sistem pelaporan hasil pelaksanaan pekerjaan

5.1.1.2. Setiap awal kerja, dan atau pergantian shift, Nahkoda kapal harus melakukan *Tool box meeting*, serta memastikan bahwa seluruh crew dalam sehat dan siap untuk melaksanakan pekerjaan.

5.1.2. Pelaksanaan Pengoperasian Kapal Tunda

5.1.2.1. Nakhoda atau Perwira Jaga menerima perintah dari Stasiun Pandu lewat Radio *VHF* channel 12/14 , *channel* yang telah disepakati/aplikasi dan atau menerima surat perintah dari perusahaan. Untuk seluruh teknis komunikasi, seluruh crew kapal wajib menggunakan bahasa Inggris dan bahasa Indonesia.

5.1.2.2. Awak kapal melakukan persiapan pelayanan penundaan sebagai berikut :

a. Nakhoda atau Perwira Jaga deck menginformasikan persiapan olah gerak dengan cara membunyikan *general alarm* sebanyak 3 (tiga) kali pendek dan atau pengumuman melalui *public addresor*.

b. KKM atau Perwira jaga mesin setelah mendapatkan informasi persiapan olah gerak segera mempersiapkan *main engine*, *auxiliary engine* dan sarana bantu lainnya setelah kamar mesin siap menginformasikan ke anjungan melalui *SPT (sound powered telephone)* atau alat isyarat lainnya.

c. Nakhoda atau Perwira jaga deck melakukan persiapan/pengecekan seluruh alat navigasi (*Stering drive*, Indikator Kemudi, Radar, GPS, Indikator Mesin, dll), tali temali, lampu lampu kerja (jika malam hari).

d. Nakhoda atau Perwira jaga deck memastikan dan menginformasikan semuanya telah siap baik dari kamar mesin, peralatan dianjungan, perlengkapan penundaan, dan ABK yang bertugas telah berada di posisi masing-masing dan kapal siap olah gerak.

e. Awak kapal dalam bekerja selalu menggunanakan APD (Alat Pelindung Diri) diantaranya *Wear Pack*, *Safety Shoes*, *Safety Helmet* dan *Life Jacket/Life Vest* dengan penjabaran sebagai berikut :

NO	LOKASI	JENIS APD
1	Anjungan	• Wearpack
2	Kamar Mesin	• Wearpack
		• Safety Shoes
		• Safety Helmet
		• Earplug / earmuff
		• Masker
		• Sarung Tangan
3	Main Deck	• Wearpack
		• Safety Shoes
		• Safety Helmet
		• Life Jacket / Life Vest
		• Kacamata
		• Sarung Tangan

Kecuali ke 3 (tiga) area tersebut diatas berpakaian bebas, rapi dan sopan.

Contoh seragam wearpack resmi PT. Pelindo Marine Service

- Seluruh crew dilarang mengoperasikan alat komunikasi (telepon genggam), selain alat komunikasi khusus operasional kapal;
- Seluruh crew kapal dilarang merokok, kecuali di mess room/Salon kapal tunda. Setelah merokok, wajib memastikan bahwa rokok sudah benar-benar mati dan tidak ada api maupun abu sisa rokok;
- Seluruh crew kapal dilarang berjudi, mengkonsumsi minuman keras maupun obat-obatan terlarang (narkotika, zat adiktif, dll).

5.1.2.3. Sebelum kapal bergerak/lepas dari dermaga/tambatan/*jetty* memastikan sekeliling kapal bebas dari segala rintangan/hambatan/bahaya.

5.1.2.4. Nakhoda atau Perwira jaga dalam menjalankan tugas pelayanaan penundaan kapal berkoordinasi dengan Petugas Pandu/*Morring Master* atau nakhoda kapal yang ditunda dalam melaksanakan pelayanan penundaan kapal melalui Radio *VHF (Very Hight Frequency) channel* yang telah ditentukan atau berkoordinasi dengan Departemen Operasi jika melakukan pelayanan non SBPP.

5.1.2.5. Untuk pengambilan tali tunda (*tug line*) pada kapal yang ditunda (*assist)* kecepatan maksimal 5 knots dan tunda wajib memperhatikan keselamatan kapal pada saat penempatan tali di assist tug area. Hal ini berlaku untuk semua jenis dan ukuran kapal yang mendapatkan layanan penundaan.

5.1.2.6. Apabila dalam pelayanan penundaan didapat kondisi yang kurang aman (*unsafe*) Nakhoda atau Perwira jaga segara koordinasi dengan Petugas Pandu/*Morring Master* atau nakhoda kapal yang ditunda dan harus mengambil tindakan penyelamatan kapal sendiri dari semua resiko bahaya.

5.1.2.7. Jika terjadi kejadian/kecelakaan atau hampir kejadian/kecelakaan segera dibuatkan Berita Acara sesuai form perusahaan yang berlaku dan ditanda tangani oleh semua pihak dan melapor ke Departemen Operasi.

5.1.2.8. Nakhoda atau Perwira Jaga melapor ke Stasiun Pandu setelah selesai melakukan pelayanan kapal dan jika melakukan pelayanan non SBPP wajib melaporkan ke Departemen Operasi.

5.1.2.9. Nakhoda atau Perwira jaga mencatat ke LOH (laporan Operasional Harian) dan *log book* (Bagian deck dan Bagian mesin) tentang pelayanan penundaan.

5.1.2.10. Kapal Tunda kembali ke pangkalan dan sebelum sandar/tambat memastikan sekeliling dermaga/tambatan/*jetty* aman untuk penyandaran.

5.1.2.11. Setelah kapal sandar Nakhoda atau Perwira Jaga deck memberi tahu ke kamar mesin bahwa kapal selesai olah gerak dengan menggunakan general alarm satu kali panjang atau dengan alat komunikasi / isyarat lainnya.

5.2. Pengoperasian Kapal Pandu

5.2.1. Sebelum melakukan pengoperasian terhadap kapal Pandu, nakhoda harus memastikan hal hal sebagai berikut :

- Setiap Nahkhoda kapal wajib memahami persyaratan persyaratan terkait dengan kontrak kerjasama antara PT. Pelindo Marine Service dengan pelanggan
- Nahkoda harus memahami resiko resiko mutu, lungkungna dan K3 selama kegiatan pengoperasian Kapal Tunda
- Nahkoda kapal perlu memastikan dan mengetahui bahwa status kapal dan seruhuh awak memenuhi persyaratan dan peraturan perundangan yang berlaku sebelum melakukan kegiatan penundaan
- Nahkoda perlu memastikan bahwa kapal dalam keadaan baik dan telah mendapatkan pemeliharaan / Maintenance sesuai dengan jadwal pemeliharaan
- Memahami sistem komunikasi dengan pelanggan serta sistem pelaporan hasil pelaksanaan pekerjaan

5.2.2. Setiap awal kerja, dan atau pergantian shift, Nahkoda kapal harus melakukan Tool box meeting, serta memastikan bahwa seluruh crew dalam sehat dan siap untuk melaksanakan pekerjaan.

5.2.3. Crew kapal dalam bekerja selalu menggunanakan APD (Alat Pelindung Diri) diantaranya *Wear Pack, Safety Shoes, Safety Helmet* dan *Life Jacket/Life Vest*.

Contoh seragam wearpack resmi PT. Pelindo Marine Service

- Seluruh crew dilarang mengoperasikan alat komunikasi (telepon genggam), selain alat komunikasi khusus operasional kapal;
- Seluruh crew kapal dilarang merokok saat berada di atas kapal;
- Seluruh crew kapal dilarang berjudi, mengkonsumsi minuman keras maupun obat-obatan terlarang (narkotika, zat adiktif, dll).

5.2.4. Nakhoda Kapal atau Perwira jaga menerima perintah dari stasiun Pandu lewat radio channel 12 dan/atau 14 atau menerima surat perintah dari perusahaan.

5.2.5. Nakhoda Kapal atau Perwira jaga mempersiapkan kapal pandu untuk melakukan pelayanan pemanduan;

5.2.6. Kapal Pandu bergerak dari pangkalan untuk mengantar / menjemput pandu melakukan pelayanan pemanduan :

5.2.6.1. Pelayanan antar jemput Pandu pada sisi bawah angin atau ombak pada bagian lambung kapal yang dilayani;

5.2.6.2. Pelayanan kapal Pandu berkisar maximal 4 (empat) sekala beaufort yakni :

JENIS	*MAXIMAL ANGIN*	*MAXIMAL OMBAK*
RIB	17 Knot	1,5 Meter
Alumunium	17 Knot	1,5 Meter
Baja	20 Knot	2 Meter

5.2.6.3. Crew kapal pandu wajib menggunakan perlengkapan keselamatan pada saat pelayanan antar jemput pandu;

5.2.6.4. Crew kapal pandu wajib melakukan pengawasan pada saat proses antar jemput dan naik turunnya pandu;

5.2.7. Nakhoda Kapal atau Perwira jaga melapor ke stasiun pandu setelah selesai melakukan pelayanan pemanduan.

5.2.8. Nakhoda Kapal atau Perwira jaga menulis ke LOH (Laporan Operasional Harian) dan log book (bagian deck dan Bagian mesin)

5.2.1. Kapal Pandu kembali ke pangkalan.

6. REKAMAN

Laporan Operasional Harian KapalTunda/Pandu

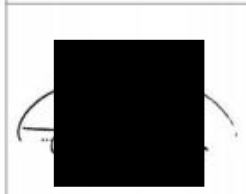
7. KRITERIA KEBERHASILAN

- Kegiatan Pelayanan Pemanduan berjalan dengan lancar dan efektif sesuai dengan persyaratan pelanggan
- Selama proses pelayanan Pemanduan, tidak terjadi kecelakaan kerja dan pencemaran lingkungan

PT. PELINDO MARINE service

PROSEDUR MENGHADAPI KEADAAN DARURAT DI KAPAL

NO DOKUMEN	:	P-SMMR-22
STATUS DOKUMEN	:	COPY NO :
NOMOR REVISI	:	02
TANGGAL EFEKTIF	:	10 Februari 2020

DIBUAT OLEH :	DIPERIKSA OLEH :	DISETUJUI OLEH :
		
Senior Manajer Sistem Manajemen dan Manajemen Risiko	Senior Manajer Sistem Manajemen dan Manajemen Risiko	Direktur Utama
Tanggal	Tanggal	Tanggal

DAFTAR DISTRIBUSI

NO.	PEMEGANG INFORMASI TERDOKUMENTASI	STATUS INFORMASI TERDOKUMENTASI	NOMOR SALINAN
1.	Direktur Utama	TERKENDALI	01
2.	Direktur Komersial, Operasi dan Teknik	TERKENDALI	02
3.	Direktur Keuangan, SDM dan Umum	TERKENDALI	03
4.	Manajemen Representatif	TERKENDALI	04
5.	Senior Manajer SDM dan Umum	TERKENDALI	05
6.	Senior Manajer Komersial	TERKENDALI	06
7.	Senior Manajer Operasi	TERKENDALI	07
8.	Senior Manajer Teknik	TERKENDALI	08
9.	Senior Manajer Keuangan	TERKENDALI	09
10.	Senior Manajer Sistem Manajemen dan Manajemen Risiko	MASTER	10
11.	Manajer Pengadaan Barang dan Jasa	TERKENDALI	11
12.	Kepala Satuan Pengawasan Intern	TERKENDALI	12
13.	Manajer Teknologi Informasi	TERKENDALI	13
14.	Sekretaris Perusahaan	TERKENDALI	14

DAFTAR STATUS REVISI DAN PERSETUJUAN

NO	TGL PERUBAHAN	ISI PERUBAHAN	ALASAN	DIREVISI OLEH
1	01/11/2018	Penyesuaian Nama Departemen dengan STO yang Baru	Perubahan Struktur Organisasi Perusahaan Nomor: PER.8/OS.0101/ PMS-2018 menjadi Nomor: PER.14/OS.0101/ PMS-2018	MR
2	10/02/2020	Penambahan Referensi ISO 45001:2018	Upgrade dari OHSAS ke ISO 45001:2018	MR
	10/02/2020	Perubahan nomor sispro dari P-SMMR-23 menjadi P-SMMR-22	1. Upgrade dari OHSAS ke ISO 45001:2018 2. Penggabungan sispro P-SMMR-02 yang lama dengan P-OP-06 tentang ***Tugas dan tanggung jawab awak kapal***, sehingga merubah keseluruhan nomor dokumen sispro Departemen SMMR.	MR

1. TUJUAN

Untuk memberikan panduan bagi awak kapal dalam menghadapi keadaan darurat yang terjadi di kapal guna meminimalisir timbulnya korban cidera atau korban jiwa, kerusakan atau kehilangan properti serta pencegahan pencemaran lingkungan.

2. RUANG LINGKUP

Prosedur ini berlaku dalam menghadapi setiap kejadian nyaris celaka *(nearmiss)*, insiden kecelakaan, keadaan darurat yang membahayakan jiwa, kapal dan lingkungan laut.

3. DEFINISI

3.1. **Keadaan darurat** adalah keadaan diluar dari keadaan normal yang dapat berdampak pada ancaman keselamatan dan pencemaran lingkungan.

3.2. **Tempat berkumpul (muster point)** adalah tempat yang dianggap aman untuk berkumpul jika terjadi kondisi darurat, dimana area tersebut telah ditentukan oleh organisasi.

3.3. **Evakuasi** adalah upaya penyelamatan memindahkan orang dari tempat kejadian keadaan darurat ke tempat yang aman (muster point).

3.4. **ERT** adalah Emergency Response Team yaitu tim yang melakukan tindakan penanganan kondisi darurat.

4. REFERENSI

4.1. *International Safety Management Code (ISM Code 2010)* elemen 8.1 dan elemen 9.1

4.2. Peraturan Menteri Perhubungan Nomor 45 Tahun 2012 pasal 9 huruf g dan huruf h, pasal 16 ayat 1 dan pasal 17 ayat 1

4.3. *Safety Of Life At Sea (SOLAS)*

4.4. Peraturan Pemerintah No.50 Tahun 2012 Tentang Sistem Manajemen Keselamatan Dan Kesehatan Kerja Sub Elemen 6.7

4.5. Standar Intenasional Sistem Manajemen Kesehatan dan Keselamatan Kerja ISO 45001:2018 Klausul 8.2 Kesiagaan dan Tanggap Darurat.

5. URAIAN PROSEDUR

5.1. Daftar Peran/Sijil Keadaan Darurat *(Emergency Muster List)*

Nakhoda wajib membuat dan menerbitkan daftar peran/sijil keadaan darurat *(Emergency Muster List)* untuk mempersiapkan seluruh awak kapal dalam menghadapi keadaan darurat yang sewaktu-waktu dapat terjadi di atas kapal.

Daftar peran ini dibuat berdasarkan jumlah awak kapal, susunan awak kapal dan tim yang akan menangani keadaan darurat di atas kapal. Setiap awak kapal wajib membaca dan memahami daftar peran ini serta melaksanakan tugasnya seperti yang tercantum apabila keadaan darurat terjadi.

5.2. Tindakan Segera Dalam Keadaan Darurat

Bilamana terjadi suatu keadaan darurat, prioritas utama Nakhoda adalah memastikan keselamatan seluruh awak kapal, kapal, pencegahan pencemaran, dan mengambil tindakan segera untuk merespon kejadian tersebut. Nakhoda dapat menggunakan semua peralatan yang tersedia di atas kapal untuk merespon keadaan darurat ini (peralatan radio, peralatan keselamatan, peralatan pemadam, *pyrotechnic* dll).

5.2.1. Kapal Tubrukan

5.2.1.1 Tindakan Awal Pada Waktu Kapal Tubrukan

Nakhoda harus menilai situasi dengan cepat dan tepat, memberikan prioritas utama pada keselamatan manusia di atas kedua kapal yang bertubrukan.

Reaksi Pertama Pada Waktu Tubrukan, Nakhoda atau perwira jaga harus segera mengambil tindakan-tindakan sebagai berikut:

a) Stop mesin jika memang mungkin;

b) Bunyikan *general alarm* dan pengumuman keadaan darurat serta perintah berada di pos masing-masing sesuai sijil darurat melalui pengeras suara;

c) Hidupkan lampu-lampu deck (jika kejadian malam hari);

d) Tarik perhatian kapal-kapal di sekitar dengan cara apapun, VHF Channel 16, isyarat lampu atau kirim peringatan marabahaya atau komunikasi lainnya sesuai keperluan;

e) Kibarkan isyarat kode Internasional yang menyatakan: *NOT UNDER COMMAND*.

5.2.1.2 Penegasan Segera Setelah Tubrukan

Nakhoda atau perwira jaga di anjungan harus segera menegaskan dan mencatat segala hal yang menyangkut tubrukan ini dalam form laporan tubrukan kapal.

5.2.1.3 Peran Keadaan Darurat

Nakhoda harus segera mengkoordinasi tim komando di anjungan dan memerintahkan peran keadaan darurat.

Tugas Tim Komando antara lain:

a) Pastikan setiap tim memeriksa keadaan di bagian masing-masing untuk memastikan berapa banyak korban cidera atau orang yang hilang;

b) Pastikan setiap tim memeriksa keadaan di bagian masing-masing

c) Setelah yakin, beritahu semua pos agar segera siap menerima instruksi selanjutnya;

d) Berikan arahan untuk reaksi di tempat kejadian kepada komandan tim;

e) Komunikasi dengan pihak luar (instansi Pemerintah terkait dan atau kapal di sekitar kejadian);

f) Laporkan kepada perusahaan sesuai laporan kecelakaan laut.

5.2.1.4 Keselamatan Jiwa Manusia

a) Berikan prioritas utama pada operasi SAR jika ada korban cidera atau orang yang hilang;

b) Dalam hal kapal lain perlu bantuan untuk menyelamatkan jiwa manusia, segera berikan bantuan dengan tidak membahayakan kapal sendiri;

c) Jika diperlukan meminta bantuan kapal lain di sekitar kejadian dan atau bantuan dari tim SAR untuk penyelamatan.

5.2.1.5 Komando di tempat kejadian

Mualim I harus segera pergi ke tempat tubrukan untuk memeriksa dan memastikan hal-hal berikut dan melaporkan temuannya kepada Tim Komando.

a) Apakah terjadi kebakaran atau tidak, atau adanya risiko kebakaran;

b) Ambil gambar disekitar tempat kejadian untuk mengetahui besar dan jenis kerusakan;

c) Pastikan ada tidaknya kebocoran lambung dan perhatikan perubahan isi tangki kapal setiap saat;

d) Ringkasan dari jenis dan besarnya kerusakan kapal lain.

5.2.1.6 Persiapan Catatan dan dokumen yang akan diajukan

a) Peta lintasan kedua kapal dan diagram yang menggambarkan tubrukan;

b) Peta-peta yang dipakai;

c) Log Book deck/mesin, buku jaga, buku olah gerak, buku S/B, log kemudi, log radar;

d) Skema kerusakan kapal;

e) Isilah formulir laporan tubrukan;

f) Nakhoda harus menyiapkan laporan kerusakan yang menyatakan rincian dari kejadian.

5.2.2. Kapal Kandas/Terdampar

5.2.2.1 Tanggapan Awal Pada Waktu Kapal Kandas/Terdampar

Nakhoda atau perwira jaga harus segera mangambil langkah-langkah berikut:

a) Stop mesin induk (M/E);

b) Beritahu Nakhoda;

c) Bunyikan general alarm dan perintahkan peran keadaan darurat melalui pengeras suara;

d) Beritahu Engine Control Room;

e) Hidupkan lampu-lampu deck (kalau kejadian pada malam hari);

f) Tarik perhatian kapal di sekitar kejadian dengan panggilan VHF Ch 16 dan atau isyarat lampu;

g) Kibarkan isyarat Internasional yang mengatakan kapal sedang kandas dan hidupkan lampu isyarat.

5.2.2.2 Penegasan setelah kandas/terdampar

Nakhoda atau perwira jaga di anjungan harus segera memeriksa segala sesuatu kelayakan sesuai dengan laporan kapal kandas atau terdampar.

5.2.2.3 Peran Keadaan Darurat

Nakhoda harus segera mengkoordinasi tim komando di anjungan dan memerintahkan peran keadaan darurat.

Tugas Tim Komando antara lain:

a) Pastikan setiap tim memeriksa keadaan di bagian masing-masing untuk memastikan berapa banyak korban cidera atau orang yang hilang;

b) Pastikan setiap tim memeriksa keadaan di bagian masing-masing untuk mengetahui kondisi terakhir;

c) Setelah yakin, beritahu semua pos agar segera siap menerima instruksi selanjutnya;

d) Berikan arahan untuk reaksi di tempat kejadian kepada komandan tim;

e) Komunikasi dengan pihak luar (instansi Pemerintah terkait dan atau kapal di sekitar kejadian);

f) Laporkan kepada perusahaan sesuai laporan kecelakaan laut.

5.2.2.4 Keselamatan Jiwa Manusia

a) Berikan prioritas utama pada operasi SAR jika ada korban cidera atau orang yang hilang;

b) Jika diperlukan meminta bantuan kapal lain di sekitar kejadian dan atau bantuan dari tim SAR untuk penyelamatan.

5.2.2.5 Komando di tempat kejadian

Mualim I harus segera pergi ke area titik kandas kapal untuk memeriksa dan memastikan hal-hal berikut dan melaporkan temuannya kepada Tim Komando.

a) Apakah terjadi kerusakan atau kebocoran lambung;

b) Melakukan pengukuran kedalaman air laut sekitar kapal;

c) Pastikan ada tidaknya kebocoran lambung dan perhatikan perubahan isi tangki kapal setiap saat;

5.2.2.6 Persiapan Catatan dan dokumen yang akan diajukan

a) Peta lintasan dan diagram yang menggambarkan area kandas kapal;

b) Peta-peta yang dipakai;

c) Jurnal harian deck dan mesin;

d) Skema kandas kapal;

e) Isilah formulir laporan kapal kandas;

f) Nakhoda harus menyiapkan laporan kerusakan yang menyatakan rincian dari kejadian.

5.2.3. Kebakaran Kapal

5.2.3.1 Tanggapan Pada Waktu Kebakaran Kapal

Jika kapal mengalami kebakaran, pertimbangan yang cepat dan tepat harus diambil dengan prioritas utama adalah keselamatan awak kapal.

5.2.3.2 Komunikasi diatas kapal saat kebakaran terjadi dan reaksi awal

Jika salah seorang awak kapal mengetahui adanya kebakaran, dia harus memberitahu seluruh awak kapal dengan segala cara seperti: Alarm kebakaran atau berteriak dan atau menggunakan peralatan komunikasi lain, lalu melaksanakan operasi pemadaman kebakaran sebagai berikut:

a) Pemadaman dengan alat pemadaman jinjing (portable fire extinguisher).

b) Pemadaman dengan air (menggunakan ember, selang, dan lain-lain).

c) Pemadaman dengan cara menutup sumber api dengan pasir, kain basah, selimut basah, atau karung basah.

5.2.3.3 Reaksi pada waktu mendengar alarm kebakaran

Langkah-langkah berikut harus diambil jika mendengar alarm kebakaran:

a) Nakhoda harus segera datang ke anjungan;

b) Lokasi kebakaran harus dicari dengan melihat "Fire Detector" di anjungan;

c) Perintahkan peran keadaan darurat kebakaran melalui pengeras suara;

d) Beritahu Engine-Control-Room (ECR);

e) Perintahkan keadaan "Stop-Engine" selama keadaan memungkinkan;

f) Tarik perhatian kapal di sekitarnya dengan VHF Ch.16 atau lampu isyarat. Siapkan komunikasi keselamatan atau komunikasi marabahaya, tergantung tingkat kegawatan;

g) Nyalakan lampu-lampu deck bila kejadian malam hari;

h) Peragakan sinyal kebakaran (jika berlayar di sekitar pelabuhan atau perairan territorial suatu negara, maka aturan-aturan Negara bersangkutan harus diperhatikan);

i) Tegaskan saluran komunikasi yang dipakai pada pemancar/penerima.

5.2.3.4 Peran Keadaan Darurat

Nakhoda harus segera memerintahkan peran pemadaman kebakaran dan membentuk "Tim Komando" di anjungan.

Tugas Tim Komando antara lain:

a) Laksanakan oleh gerak kapal agar sumber api berada di bawah angin;

b) Pastikan setiap tim melakukan penghitungan anggota untuk mengetahui apakah ada orang yang hilang atau luka-luka;

c) Setelah yakin atas situasi yang sedang berlangsung maka bentuklah suatu rancangan umum untuk mengatasi situasi tersebut;

d) Berikan arahan kepada komandan tim di tempat kejadian mengenai prosedur menanggapi situasi di tempat kejadian;

e) Hubungi pihak luar (instansi pemerintah yang terkait dan atau kapal-kapal di sekitar kejadian);

f) Laporan kepada perusahaan menggunakan formulir laporan kebakaran kapal;

5.2.3.5 Tim Pemadam Kebakaran

Mualim I harus segera langsung ke tempat kebakaran (setelah memastikan tempat kebakaran melalui "fire detector"). Dia segera memimpin Tim Pemadam Kebakaran atau dalam operasi tersebut setelah memastikan ha-hal sebagai berikut:

a) Pelaksanaan hitung anggota dan melaporkan hasilnya;

b) Memeriksa kelengkapan peralatan pemadam kebakaran (APAR, Fire Fighter Outfit, Breathing Apparatus dll);

c) Memberi instruksi kepada anggota Tim Pemadaman Kebakaran mengenai hal-hal yang harus dipastikan ditempat kebakaran (sumber dan jenis kebakaran, Apakah ada awak kapal yang terkurung di tempat yang sedang terbakar, kondisi api, dll);

5.2.3.6 Tim Pendukung

Tugas tim pendukung dipimpin Mualim II melaksanakan dukungan penunjang sebagai berikut :

a) Melaksanakan hitung anggota;

b) Mempersiapkan alat pemadam kebakaran cadangan untuk di operasikan;

c) Memberikan dukungan penunjang kepada Tim Pemadam Kebakaran;

d) Menutup ventilasi-ventilasi sesuai perintah;

e) Mengatur pemindahan atau pendinginan bahan yang mudah terbakar di sekitar area kebakaran;

f) Mempersiapkan penurunan life raft sebagaimana diinstruksikan.

5.2.3.7 Tim Bagian Mesin

KKM harus segera ke kamar mesin dan menginstruksikan tim bagian mesin untuk melaksanakan hal sebagai berikut:

(Tempat berkumpul dapat diganti pada waktu kebakaran atau tergantung dari jenis kapal):

a) Melakuykan hitung anggota dan melaporkan hasilnya;

b) Menyiapkan mesin-mesin di kamar mesin dalam keadaan standby;

c) Menghidupkan pompa kebakaran dan menyiapkan pompa darurat kebakaran sesuai dengan instruksi;

d) Menjaga agar pompa tetap beroperasi sesuai dengan instruksi;

e) Melaksanakan operasional mesin sesuai dengan instruksi;

f) Memutuskan aliran listrik ke bagian kapal yang terlibat dengan kebakaran.

5.2.3.8 Lokasi Kebakaran dan Penilaian

Pemadaman awal adalah kunci keberhasilan pemadaman kebakaran. Penilaian harus di dasarkan pada lokasi sumber api, apakah lokasi tersebut di bawah ini menjadi sumber api dan prosedumya dijalankan.

a) Kebakaran pada ruang akomodasi

- Laksanakan pemadaman awal dengan alat pemadaman kebakaran, kain basah, karung atau selimut basah, menyiramkan air dan lain-lain, dan pindahkan barang-barang yang dapat menyebabkan kebakaran;
- Pastikan bahwa semua awak kapal selain dari tim pemadam kebakaran harus meninggalkan ruangan yang terlibat dalam kebakaran. Tutup ventalasi-ventalasi dan semua lobang dan celah yang terbuka.

b) Kebakaran dalam ruang mesin

- Pemadaman awal untuk kebakaran minyak harus dilakukan dengan pasir atau *foam*;
- Pemadaman untuk api listrik harus dilakukan dengan memutuskan aliran listrik ke tempat sumber api, atau dengan *dry chemycal powder*;
- Tutup semua ventilasi dan lubang angin;
- Apabila terjadi kebakaran besar, pastikan bahwa tidak ada orang dikamar mesin, dan bahwa semua lubang dan ventilasi sudah tertutup, lakukan pemadaman dengan alat pemadaman kebakaran tetap seperti sistem gas CO2.

5.2.3.9 Jenis dan Risiko Pemadaman

a) Pemadaman dengan air

- Penurunan stabilitas dan bertambahnya draff harus dipertimbangakan bila melakukan pemadaman dengan air;
- Jika sumber kebakaran terhubung dengan aliran listrik maka pemadaman dengan air dapat berdampak pada hubungan arus pendek/korsleting atau tersengat arus listrik.

b) Pemadaman dengan CO2

- Semprotkan CO2 yang cukup kedalam ruangan yang terbakar dan pastikan tidak ada orang didalamnya;

- Teruskan pemadaman sampai apinya padam atau gas CO2-nya habis apabila kebakaran terjadi di ruangan terbuka.

5.2.3.10 Permintaan Bantuan

Permintaan bantuan harus dilakukan secepat mungkin untuk menghindari korban jiwa, kerusakan *property* dan atau pencemaran lingkungan. Permintaan bantuan disesuailkan dengan prosedur komunikasi radio.

5.2.3.11 Meninggalkan Kapal

Jika Nakhoda memutuskan bahwa kapal harus ditinggalkan maka prosedur untuk meninggalkan kapal harus diperhatikan.

5.2.3.12 Persiapan Catatan dan dokumen yang akan diajukan

a) Peta lintasan dan diagram yang menggambarkan area kapal terbakar;

b) Peta-peta yang dipakai;

c) Jurnal harian deck dan mesin;

d) Laporan kerusakan;

e) Isilah formulir laporan kebakaran kapal;

f) Nakhoda harus menyiapkan laporan kerusakan yang menyatakan rincian dari kejadian.

5.2.4. Kerusakan Mesin

Jika terjadi kerusakan mesin sewaktu kapal di tengah laut (dalam pelayaran) maka tindakan darurat, sebagai berikut harus segera diambil :

5.2.4.1 Reaksi Nakhoda

Jika Nakhoda menerima laporan kerusakan salah satu mesin penting dari perwira/masinis jaga atau menyadari bahwa hal tersebut sedang terjadi, maka dia harus segera ke anjungan dan mengambil alih Komando.

5.2.4.2 Tindakan-tindakan

a) Tambahan jumlah ABK jaga;

b) Lakukan pemeriksaan keadaan kedalaman air, arah dan kecepatan hanyutnya kapal, kondisi kepadatan lalu lintas kapal sekitar, kondisi laut dan cuaca;

c) Siapkan jangkar untuk dilego apabila hanyut terbawah arus atau angin ke arah yang berbahaya terutama mendekati pantai.

5.2.4.3 Pertimbangan

a) Dengan mempertimbangkan posisi dan kondisi kerusakan permesinan, usahakan setiap kerusakan diperbaiki oleh awak kapal sendiri, jika memungkinkan;

b) Dalam hal tindakan perbaikan segera tidak mungkin dilaksanakan karena keadaan di sekitar kapal, pindahkan kapal di perairan yang relatif aman, dan lakukan perbaikan di sana;

c) Jika perbaikan dinilai tidak praktis karena situasi dan kondisi tidak memungkinkan perbaikan oleh awak kapal (posisi kapal, kondisi laut dan cuaca pada saat itu, dan kondisi kegagalan atau kerusakan mesin) siapkan permintaan bantuan kapal lain, usahakan instruksi dari perusahan terlebih dahulu.

5.2.4.4 Pemberitahuan dan Laporan

Nakhoda harus memberitahukan ke perusahaan dengan menggunakan formulir laporan kerusakan. Nakhoda harus memberikan rincian Damage Report (Laporan Kerusakan) atau Check-List dari mesin-mesin penting kepada perusahaan pada kesempatan pertama.

5.2.5. Menolong Orang Jatuh Ke Laut

5.2.5.1 Tanggung Jawab Orang Yang Melihat

Setiap awak kapal yang mengetahui orang jatuh ke laut maka harus melakukan tindakan sebagai berikut:

a) Langsung berteriak bahwa ada orang jatuh kelaut

b) Orang yang berada didekat orang yang jatuh ke laut segera melemparkan pelampung, terutama yang memiliki tali penolong, lampu dan sinyal asap ke dekat orang yang jatuh ke laut;

c) Melaporkan insiden tersebut ke perwira jaga di anjungan dengan segera.

5.2.5.2 Tindakan awal Perwira Jaga

Perwira jaga yang mendengar/menyaksikan adanya orang yang jatuh ke laut atau orang yang terlempar ke laut harus secepatnya mengambil tindakan berikut ini:

a. Arahkan/putar kemudi ke orang yang jatuh ke laut dan memulai olah gerak Williamson;

b. Lemparkan pelampung dengan isyarat lampu dan isyarat asap yang berada di anjungan navigasi;

c. Laporkan ke Nakhoda secepatnya;

d. Aktifkan sinyal darurat untuk penyelamatan;

e. Beritahu KKM atau masinis jaga;

f. Lanjutkan agar kapal mendekati posisi orang yang jatuh ke laut;

g. Plot posisi orang jatuh ke laut pada peta;

h. Memberitahu kapal-kapal di sekitar.

5.2.5.3 Pencarian Orang Hilang Di Laut

Nakhoda harus berusaha keras untuk menemukan awak kapalnya yang hilang di laut. Ia harus melakukan tindakan sebagai berikut:

a) Ambil foto ditempat-tempat yang relevan (cabin tempat tinggal personil/awak kapal yang jatuh, perkiraan tempat dimana personil tersebut kemungkinan jatuh, dsb);

b) Tentukan posisi kapal pada waktu personil dilaporkan hilang dan mencatatnya;

c) Upayakan untuk memastikan waktu dan tanggal kejadian serta posisi kapal dari pernyataan saksi atau yang terakhir kali melihat personil hilang;

d) Kirim pesan penyelamatan ke seluruh kapal di sekitar lokasi untuk membantu pencarian;

e) Ajukan permintaan bantuan ke instansi terkait (Badan SAR, polisi pantai, stasiun radio pantai terdekat dsb);

f) Laksanakan operasi SAR (Search and Rescue);

g) Laporkan ke Perusahaan;

h) Catat semua rincian kejadian pada buku jurnal harian deck (deck log book)

5.2.5.4 Operasi Pencarian dan Penyelamatan

a) Operasi Pencarian dan Penyelamatan harus direncanakan dan dilaksanakan sesuai dengan "Merchant Ship Search and Rescue Manual" (MERSAR Manual);

b) Kondisi umum laut dan cuaca disekitar lokasi pencarian harus dipertimbangkan juga dalam operasi penyelamatan;

c) Metoda pencarian dan penyelamatan yang digunakan harus ditentukan juga berdasarkan kecepatan kapal selama pencarian, tingkat kehati-hatian, jumlah kapal di sekitar lokasi dan pola pencarian;

d) Pencarian boleh dihentikan jika setelah 24 jam, upaya menemukan orang yang hilang gagal.

5.2.5.5 Dokumen yang harus dikirimkan

Dokumentasi berikut harus dilengkapi oleh Nakhoda dan dikirim ke pihak berwenang yang terkait :

a) Marine Note of Protest (Pernyataan cuaca dan kondisi laut/force majeur) ;

b) Daftar barang pribadi dari orang yang jatuh ke laut (*List of effects left onboard*);

c) Bukti-bukti pengamatan dan orang-orang yang terlibat (harus ditanda tangani oleh personil yang membuat pernyataan);

d) Pernyataan kecelakaan bersama dengan foto-foto yang relevan serta sketsa daerah pelayaran dimana diperkirakan orang yang hilang di laut itu jatuh;

e) Laporan Pencarian orang hilang (dilampirkan juga rencana pencariannya);

f) Sketsa dan foto ruang akomodasi dimana tempat tinggal personil yang hilang;

g) Data cuaca pada saat orang tersebut jatuh ke laut;

h) Dokumen lain sebagaimana diperintahkan oleh Perusahaan.

5.2.6. Personil Sakit/Terluka Serius

Bilamana ada personil di kapal yang mengalami sakit atau terluka serius, Nakhoda harus melaksanakan tindakan sebagai berikut:

5.2.6.1 Respon

a) Nakhoda harus memberikan pertolongan pertama yang memadai agar sakit atau luka serius yang diderita tidak bertambah parah;

b) Nakhoda harus menghubungi perusahaan atau perwakilan terdekat untuk pertolongan atau rujukan dokter di darat atau mengatur rawat inap pasien di rumah sakit terdekat;

c) Nakhoda harus melaporkan seluruh tindakan yang diambil ke Perusahaan;

d) Nakhoda juga harus mencatat kegiatan tersebut dalam buku jurnal harian deck.

5.2.6.2 Rincian Komunikasi

Bilamana Nakhoda memerlukan untuk berkomunikasi dengan Perusahaan atau pihak yang berwenang dalam menangani masalah medis berkaitan dengan anggota awak kapal, ia harus memasukkan hal berikut dalam laporannya :

a) Nama Perusahaan dan kapal;

b) Nama panggilan atau nomor IMO;

c) Nama, jabatan dan umur pasien;

d) Waktu dan tanggal jatuh sakit;

e) Lokasi pasien jatuh sakit;

f) Perawatan atau pertolongan yang sedang dilaksanakan;

g) Catatan rekaman kesehatan (Medical History);

h) Daftar inventaris obat-obatan di kapal;

i) Pelabuhan keberangkatan, pelabuhan tujuan dan perkiraan tanggal kedatangan.

5.2.6.3 Dokumen yang harus dikirim

a) Marine Note of Protest dan rancangan deviasi tujuan;

b) Rincian deviasi tujuan pelayaran

c) Pernyataan kecelakaan ;

d) Dokumen-dokumen lain yang diperintahkan perusahaan.

5.2.7. Awak Kapal Meninggal Dunia

Bilamana ada salah satu awak kapal meninggal dunia, Nakhoda harus melaporkannya ke layanan medis di darat, dan membuat surat keterangan perihal kematiannya berdasarkan ketentuan dokter.

Seseorang dinilai sudah meninggal bilamana nafasnya berhenti, tidak ada denyut jantung atau nadi, dan pupil matanya tidak bereaksi terhadap cahaya.

5.2.7.1 Tindakan

Bila terjadi kematian di kapal pada saat kapal berlayar dan tidak ada dokter di kapal, Nakhoda harus melaksanakan tindakan sebagai berikut:

a) Tentukan dan catat tanggal dan waktu kematiannya sesuai ketentuan dokter;

b) Dalam hal kecelakaan fatal, ambil foto seluruh badan dan kondisi di sekitar kejadian;

c) Kumpulkan sebanyak mungkin laporan dan pernyataan dari personil terkait untuk menentukan sebab kematian;

d) Persiapkan daftar barang–barang peninggalan korban (dengan 2 atau lebih saksi dan ditanda tangani oleh Nakhoda dan saksi-saksi)

e) Buat laporan ke Perusahaan

f) Catat di Log Book Deck.

5.2.7.2 Dokumen yang diperlukan untuk pengiriman lewat udara

Jika jenazah dikirim lewat udara, dokumen yang diperlukan adalah:

a) Buku Pelaut, KTP, Pasport;

b) Berita Acara Kematian;

c) Akte kematian dari dokter (2 copy, dikeluarkan oleh rumah sakit setempat);

d) Permintaan untuk membawa mayat.

5.2.7.3 Dokumen Yang Harus Dikirim

Nakhoda harus mengirimkan dokumen-dokumen berikut kepada pihak berwenang:

a) Marine Note of Protest;

b) Daftar barang-barang peninggalan korban;

c) Pernyataan tertulis dari saksi mata dan personil yang terkait (harus ditanda tangani oleh yang membuat);

d) Akte kematian dari rumah sakit/dokter;

e) Dokumen lain yang diperintahkan perusahaan.

5.2.8. Meninggalkan Kapal

Hanya Nakhoda, atau bilamana tidak ada, Perwira Senior di kapal yang berhak memberikan perintah meninggalkan kapal.

5.2.8.1 Dasar Pertimbangan Nakhoda

Nakhoda harus mempertimbangkan hal-hal berikut sewaktu mengambil keputusan untuk meninggalkan kapal:

a) Jenis dan besarnya kerusakan kapal;

b) Pengaruh dari perbaikan sementara;

c) Waktu yang dibutuhkan untuk meninggalkan kapal serta persiapan-persiapannya;

d) Keadaan laut dan cuaca terakhir dan ramalan cuaca;

e) Alat-alat keselamatan yang sesuai/berguna pada situasi ini.

5.2.8.2 Pemancaran Komunikasi Marabahaya

Nakhoda harus mempertimbangkan perwira radio dan perwira-perwira deck untuk memancarkan komunikasi-komunikasi dan atau tanda-tanda marabahaya sebagai berikut, sebelum meninggalkan kapal:

a) Pengulangan panggilan MAY DAY melalui radiotelephone;

b) Sinyal melalui *Electronic Position Indicating Radio Beacons (EPIRB)*;

c) Pengiriman sinyal melalui Global Distress Systems (GDS);

d) Sinyal-sinyal lain sebagaimana dijelaskan dalam Peraturan.

5.2.8.3 Perintah Tugas di Pos Masing-masing

Jika Nakhoda memutuskan untuk meninggalkan kapal, maka dia memerintahkan dengan segera agar semua orang di pos masing-masing untuk "Pos meninggalkan kapal" (*Abandon Ship Station*).

5.2.8.4 Tindakan pada waktu meninggalkan kapal

a) Pastikan semua awak kapal sudah berkumpul dan jumlahnya lengkap;

b) Membawa semua dokumen penting (dokumen kapal dan dokumen awak kapal);

c) Ambil langkah-langkah yang perlu untuk mencegah terhisap baling-baling;

d) Pastikan life raft sudah terbuka dengan sempurna;

e) Jaga agar semua lampu menyala.

5.2.9. Menolong Kapal Lain Dalam Bahaya

Menolong kapal lain khususnya dilaksanakan untuk menolong awak kapal lain yang berada dalam marabahaya dan bukan untuk membantu menyelamatkan kapal dalam marabahaya yang mengalami kerusakan akibat tubrukan atau sebab kecelakaan lainnya.

5.2.9.1 Menolong Orang Dalam Bahaya

Bilamana Nakhoda mengetahui ada kapal lain dalam marabahaya, ia harus

berusaha menyelamatkan orang-orang yang berada dalam marabahaya. Nakhoda dapat memulai penyelamatan, kecuali hal tersebut dapat membahayakan kapal dan awak kapalnya.

5.2.9.2 Laporan

Nakhoda harus mengirim dokumen di bawah ini dalam laporan operasi penyelamatan:

a) Marine Note of Protest;

b) Pernyataan kecelakaan yang berisi :

Nama kapal, pelabuhan pendaftaran, nama dan alamat pemilik kapal, tonase, jenis dan jumlah muatan yang dibawa;

c) Operasi penyelamatan yang dilakukan, jam kerja dan kondisi cuaca.

6. REKAMAN

6.1. Formulir Laporan Tubrukan Kapal

6.2. Formulir Laporan Kapal Kandas

6.3. Formulir Laporan Kebakaran Kapal

6.4. Formulir Laporan Kerusakan Mesin Induk

6.5. Formulir Laporan Kerusakan Mesin Bantu (generator)

6.6. Formulir Laporan Kerusakan Kapal

7. KRITERIA KEBERHASILAN

Awak kapal dapat menghadapi keadaan darurat sesuai dengan prosedur yang tercantum dan kelengkapan dokumen untuk membuktikan keadaan darurat tersebut terjadi dapat dipenuhi.

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ISBN
BARCODE